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Prepared for:
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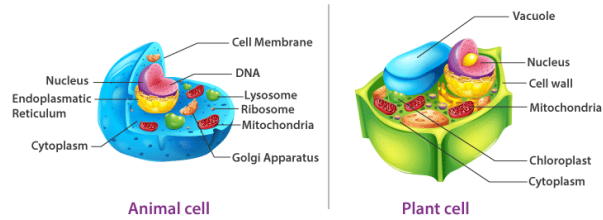
SCIENCE

6th Class

Notes for 6th Class
SNC Syllabus Punjab



Unit-I Cellular Organization



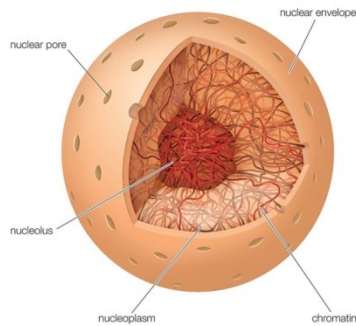
1.1 Encircle the correct option.

1. An animal cell has:
 - a. single vacuole
 - b. Two vacuoles
 - c. many vacuoles**
 - d. no vacuole
1. Mitochondria are the cell organelles that play role in:
 - a. protein synthesis
 - b. food production
 - c. producing energy from food**
 - d. removing waste products
- 3 Chromosomes are present in:
 - a. chloroplast
 - b. nucleus**
 - c. cell wall
 - d. vacuole
4. Cell membrane is composed of:
 - a. proteins and lipids**
 - b. cellulose and lipids
 - c. cellulose and proteins
 - d. lipids
5. Chlorophyll is a pigment whose colour is:
 - a. red
 - b. blue
 - c. yellow
 - d. green**
6. Human skin is made of:
 - a. muscle tissue
 - b. blood tissue
 - c. epidermal tissue
 - d. epithelial tissue**
7. Oxygen is carried from lungs and supplied to the whole body by:
 - a. white blood cells
 - b. red blood cells**
 - c. platelets
 - d. bone cells
8. Site for respiration in a cell is:
 - a. nucleus
 - b. endoplasmic reticulum
 - c. chloroplast
 - d. mitochondria**
9. Water is conducted front roots to leaves by:
 - a. xylem**
 - b. phloem
 - c. epidermis
 - d. mesophyll
10. Kidneys perform functions related to:
 - a. digestive system
 - b. breathing system
 - c. circulatory system
 - d. excretory system**

1.2 Give short answers.

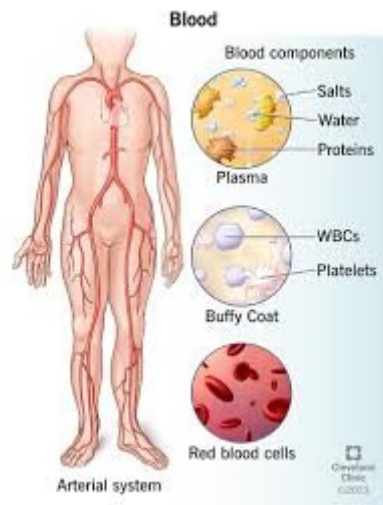
1. Name the cell organelle that controls the whole cell activity.

Nucleus controls the whole body activities.



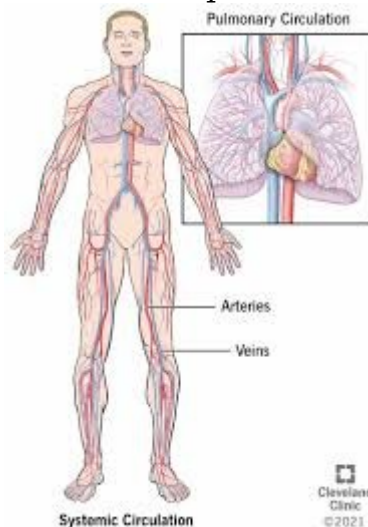
2. Write the function of blood in human body.

Blood circulates throughout the body to transport materials from one part of the body to another.



3. Enlist the organs involved in blood circulatory system in man.

Following organs are involved in blood circulatory system. Heart, arteries, veins and capillaries.



4. Name the red colored pigment present in red blood cells.

Hemoglobin is present in red blood cells.

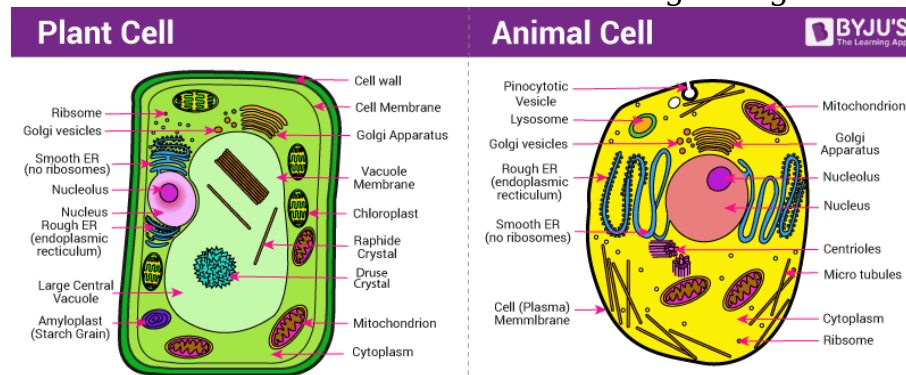


1.3 Differentiate between:

1. Animal cell and plant cell

Animal cell: it has no cell wall. It has many small vacuoles. Animals cell has no chloroplast.

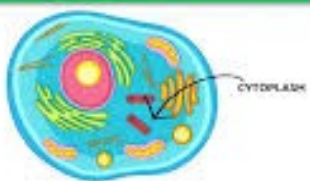

Plant cell: it has a cell wall. It has a single large vacuole. It has chloroplast.



2. Cytoplasm and nucleoplasm

□ **Cytoplasm:** The jelly-like substance inside a cell where most cell activities happen.

□ **Nucleoplasm:** The substance inside the nucleus, containing thread-like structures (chromosomes)

CYTOPLASM	NUCLEOPLASM
	
✓ Located outside the nucleus	✓ Located inside the nucleus
✓ Contains various cell organelles	✓ Contains specific nuclear organelles
✓ Does not contain DNA	✓ It contain DNA
✓ Does not have a membrane boundary	✓ Enclosed by the nuclear envelope
✓ Involved in cellular metabolism	✓ Primarily involved in nuclear processes

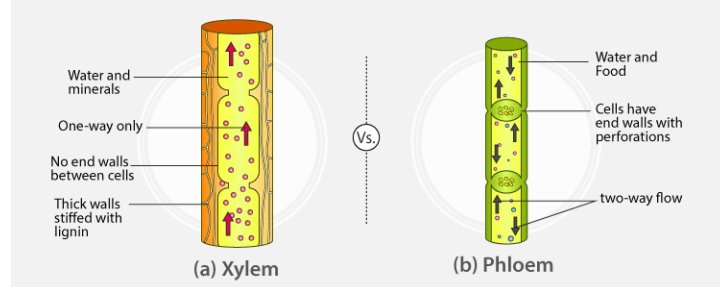
3. Xylem and phloem

Xylem: xylem cells are tubular shaped. They are used to conduct water.

Phloem: phloem cells are also tubular shaped. They are used to transport food

DIFFERENCE BETWEEN XYLEM AND PHLOEM

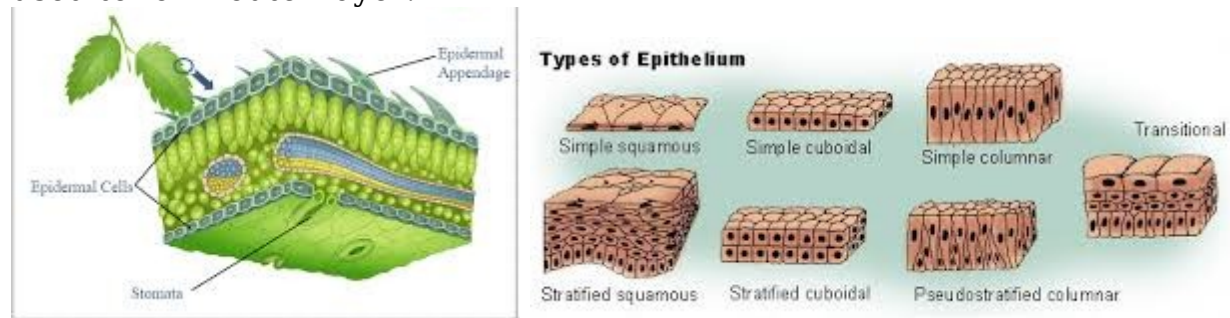
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4. Epidermal tissue and epithelial tissue

Epidermal tissue: the tile like cells which are joined together to form single layered tissue is called epidermal tissue.

Epithelial tissue: epithelial cells are flat tile shaped or cubed shaped. They used to form outer layer.

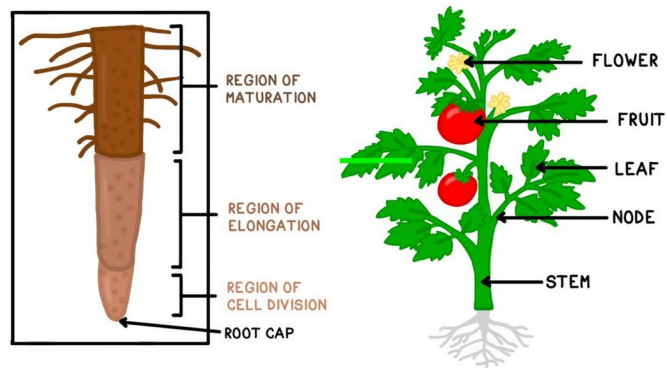


5. Root system and shoot system in plants

Root system: root and its branch make root system in plants which absorb water and nutrients from the soil.

Shoot system: the branches and flowers make shoot system of plants. It supports whole plant structure.

PLANT ROOT SYSTEM & SHOOT SYSTEM

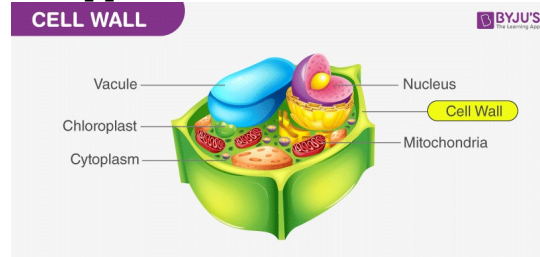


1.4 Constructed Response Questions

1. Relate the structures of the following with the functions they perform.

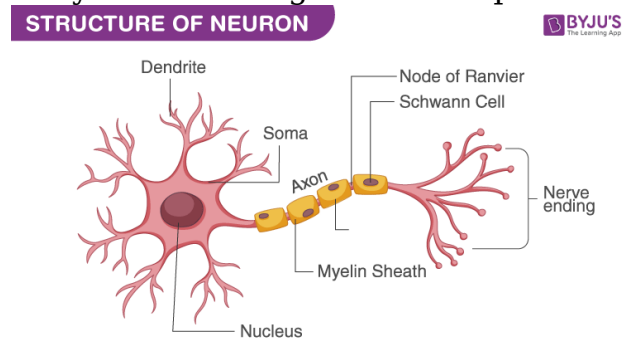
(a) Cell wall

It supports the cell and maintains its shape



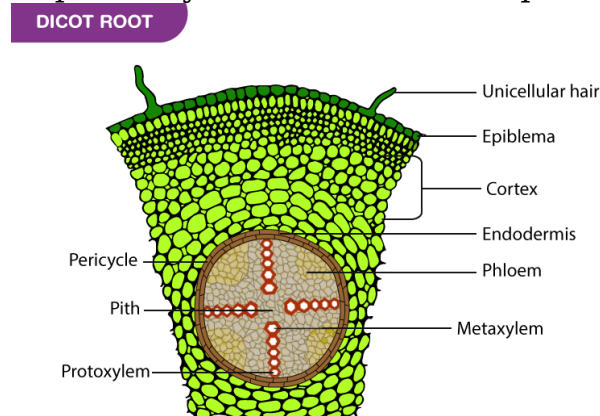
(b) Nerve cells

They send message from one part of body to other



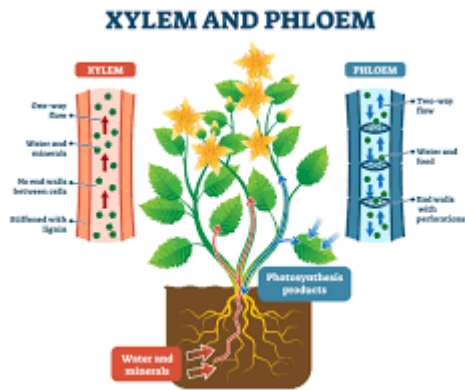
(c) Xylem

In plants xylem is used to transport water



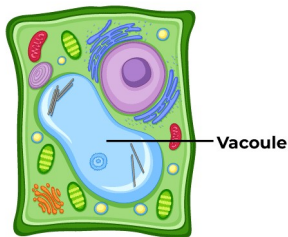
(d) Phloem

Phloem cells are used for the transport of food in plants



(e) Vacuole in plant cell

It helps to maintain shape of plant cell. It helps the plant in growth.



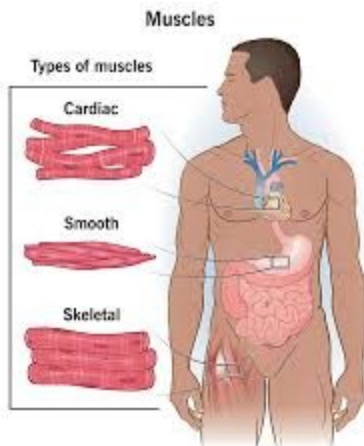
2. Identify the organization of main tissues in the following and state their functions:

- muscles and bones
- xylem and phloem

1.5 Investigate

1. Function of muscle tissues in:

- Heart:** cardiac muscle in heart make the heart beat to pump
- Stomach:** in stomach muscle tissue help in movement of wall to digest the food.
- Eye:** muscle tissue in eye help in adjustment of pupil size

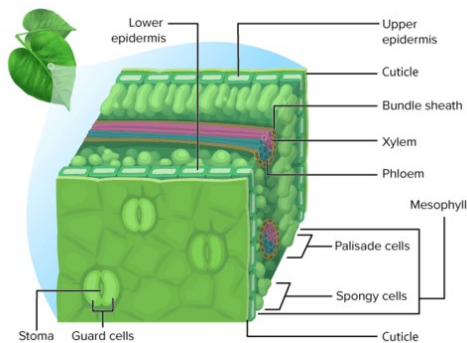


2. Structure and functions of the following in plants:

- Epidermal tissue:** The plant's outer skin, a single layer of cells protecting it.

(b) Mesophyll tissue: The layer inside leaves where food is made and waste is removed.

(c) Chloroplast: Tiny green parts in plant cells that use sunlight to make food (photosynthesis).



Unit-II Reproduction in Plants

QUESTIONS

Encircle the correct option.

- Pollination is the transfer of:
 - a sepal
 - stamen
 - c. pollen grain**
 - ovum
- Zygote is formed as a result of:
 - self-pollination
 - cross pollination
 - c .fertilization**
 - double fertilization
- Zygote develops into:
 - a. embryo**
 - embryo sac
 - endosperm
 - ovule
- Asexual reproduction in which stem of a plant is buried in soil near the parent plant:
 - a.layering**
 - budding
 - cutting
 - grafting
- The organ of a plant which takes part in sexual reproduction:
 - root
 - stem
 - leaf
 - d. flower**
- The structure which is helpful to carry sperms to the ovary:
 - a.polleri tube**
 - stigma
 - style

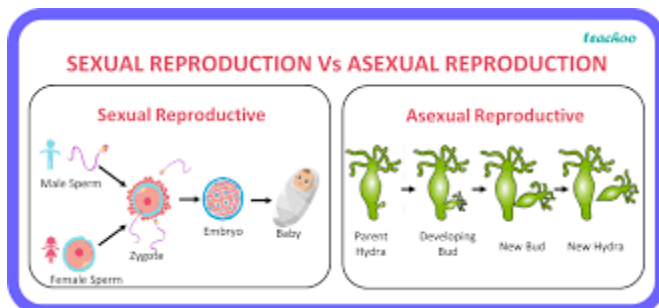
- d. filament
- 7. Which is the example of natural vegetative propagation?
 - a. runners growth into new plant**
 - b. budding
 - c. cutting
 - d. grafting
- 8. Production of new plant from underground stem is an example of:
 - a. sexual reproduction
 - b. asexual reproduction**
 - c. self-pollination
 - d. cross pollination
- 9. Fusion of a sperm with two polar nuclei forms:
 - a. zygote
 - b. embryo
 - c. ovum
 - d. endosperm**
- 10. Male reproductive cell:
 - a egg
 - b. sperm**
 - c. neuron
 - d. zygote

1.2 Differentiate between:

1. Sexual reproduction and asexual reproduction

Sexual Reproduction: Combines sperm and egg to create a new individual.

Asexual Reproduction: Creates offspring without sperm and egg, making a copy of the parent.



2. Self-pollination and cross pollination

Self-pollination: Pollen from a flower goes to the *same* flower's stigma, or another flower on the *same* plant.

Cross-pollination: Pollen from one plant's flower goes to the stigma of a flower on a *different* plant of the same type.

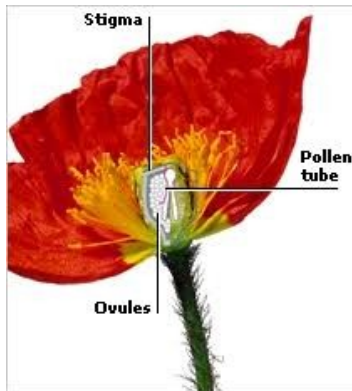
Self-Pollination Vs Cross-Pollination



3. Pollen grain and ovule

Pollen grain: Pollen grain is a male reproductive structure which gives rise to sperms

Ovule: Ovule is female reproductive structure which gives rise to the egg cell.



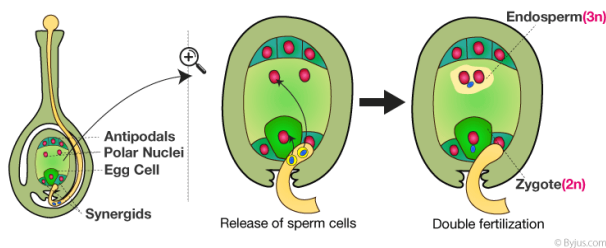
4. Fertilization and double fertilization

Fertilization: The sperm fuse with egg to form zygote this process is called fertilization.

Double fertilization: The other sperm fuses with two polar nuclei in the ovule to form triploid endosperm is called double fertilization.

DOUBLE FERTILIZATION

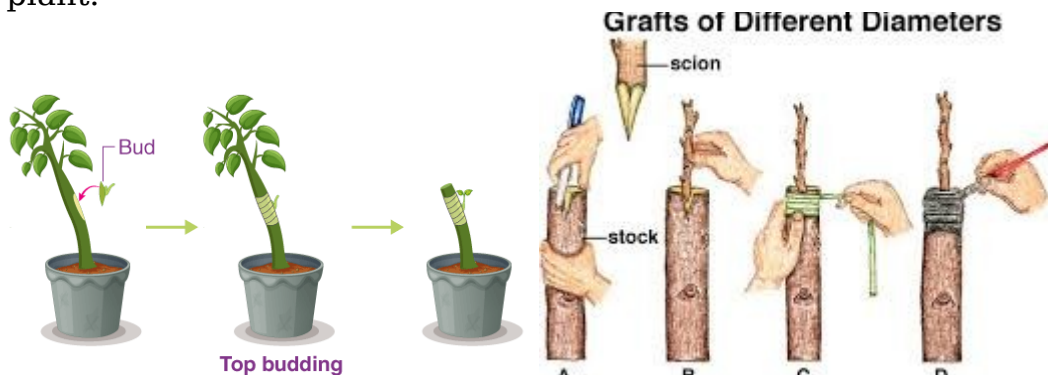
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5. Budding and grafting

Budding: In this technique a bud is used as scion this technique is used to get new varieties of plants with disease resistance.

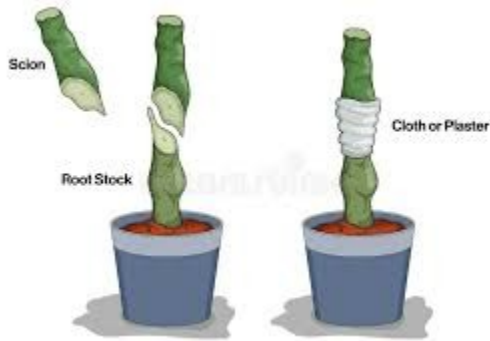
Grafting: The technique which is used to join the cut piece from a plant with some other plant in such a way that both appear to be grown as a single plant.



6. Scion and stock

Scion: The cut piece of plant is called scion.

Stock: The plant to which it is attached is called stock.



1.3 Give short answers.

1. Name three self-pollinated plants.

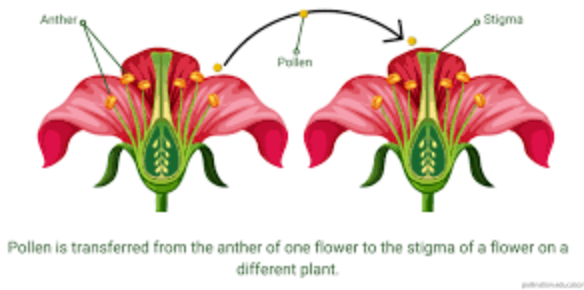
Pea, cotton and tomato are self-pollinated plants.



2. Name three cross pollinated plants.

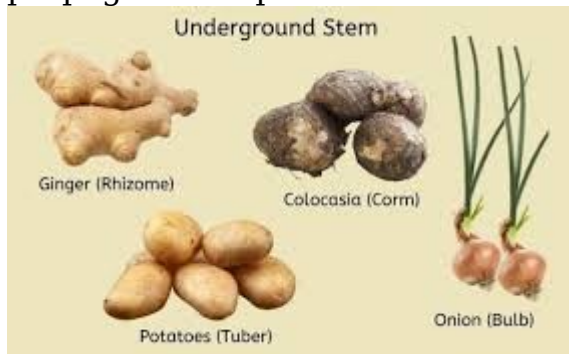
Maize, papaya and rose are cross-pollinated plants.

CROSS-POLLINATION



3. Name the underground stems that undergo natural vegetative propagation.

Underground stems (bulb, tuber are the example of natural vegetative propagation in plants.



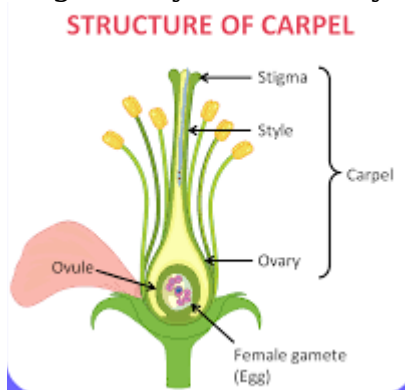
4. What are runners?

In some plants such as strawberry and grasses, stems are spread horizontally above the ground. These stems are called runners. Runners have nodes where buds are present. New plants grow from these buds.



5. Name different parts of the carpel (female reproductive structure).

Stigma, style and ovary are parts of carpel (female reproductive structure).

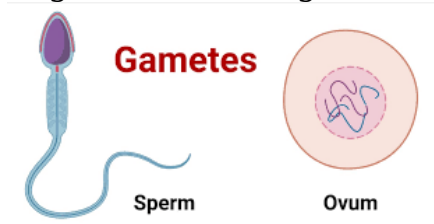


2.4 Constructed Response Questions

1. Sexual reproduction in plants involves production and fusion of male and female gametes.

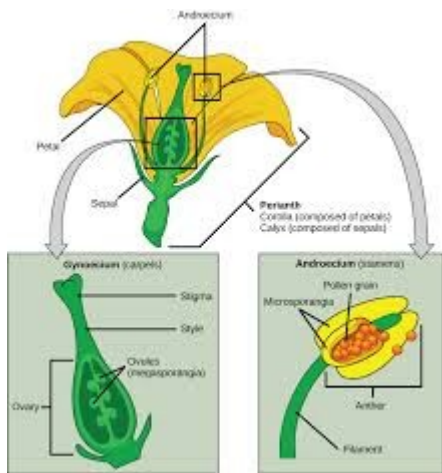
(a) What are gametes?

The sexual organs in living things are called gametes. There are two types of gametes. Male gametes, female gametes.



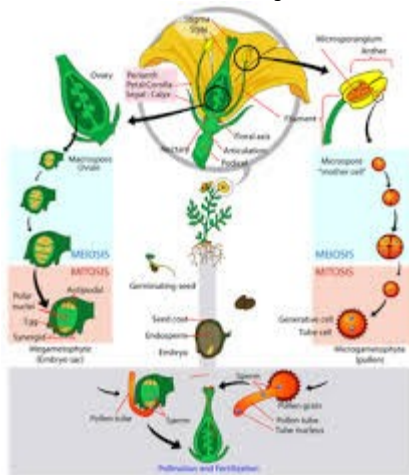
(b) Where are gametes produced in a plant body!

In plants male gametes are produced in anther, while females gametes are formed in carpel.



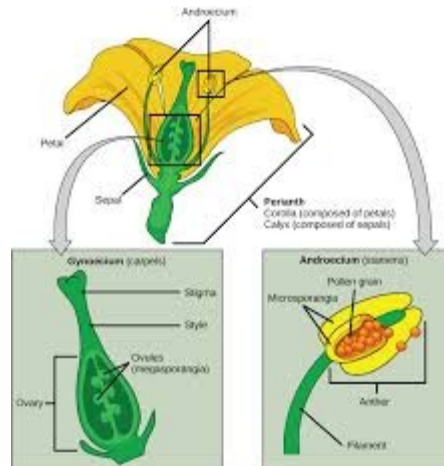
(c) How do male and female gametes approach each other for fusion?

During pollination pollen grains reach the stigma of carpe. On stigma a pollen grain germinates and form thin tube called pollen tube containing male gametes. Pollen tube grows passes down through style and reaches the ovule in ovary.



(d) Why do male and female gametes fuse with each other?

Male and female gametes fuse with each other to form zygote which is the first basic unit of a new individual.



2. A flower can produce millions of pollen grains and less number of ovules. Why

do you think it happens so?

Pollen grains are produced in large quantity to make sure at least some of them reach the stigma of another flower.



3. What do you think is the most effective way of plants reproduction?

The most effective and most common way of reproduction in plant is sexual reproduction.

Sexual Reproduction in Plants



4. Describe the advantages of artificial vegetative propagation in plants.

Plant breeding helps us:

1. Grow better fruits and vegetables.
2. Produce more of the food we need.
3. Create seedless fruits.
4. Combine the best traits of different plants.



5. Write a brief note on each of the following.

- ☐ **Cutting:** Snip a piece of plant, plant it, it grows roots and becomes a new plant.
- ☐ **Layering:** Bend a stem down and bury it; it roots, then you can separate it.
- ☐ **Grafting:** Join two plants together to grow as one.
- ☐ **Budding:** Like grafting, but using a bud.

Unit-III Balanced Diet

QUESTIONS

1. An immediate source of energy for our body is:
 - a. mango**
 - b. chicken
 - c. mushroom
 - d. meat
2. Food rich in proteins is:
 - a. potato
 - b. grapes
 - c. fish**
 - d. rice

3. Which food is best for providing fats?
 - a. fruits
 - b. butter**
 - c. vegetables
 - d. bread
4. Food rich in carbohydrates is:
 - a. corn oil
 - b. beef
 - c. egg
 - d. starch**
5. Source of vitamin A is:
 - a. table salt
 - b. carrot**
 - c. mustard oil
 - d. sugar
6. Source of starch is:
 - a. egg
 - b. meat
 - c. fish
 - d. potato**
7. Vegetable oils are included in the food group:
 - a. carbohydrates
 - b. proteins
 - c. fats**
 - d. vitamins
8. Balanced diet for an infant is:
 - a. fruit
 - b. milk**
 - c. vegetable
 - d. egg
9. Which vitamin makes the bones strong?
 - a. Vitamin A
 - b. Vitamin B
 - c. Vitamin C
 - d. Vitamin D**
10. Iron is a:
 - a. vitamin
 - b. mineral**
 - c. carbohydrate
 - d. protein

3.2 Write short answers.

1. Why do we need food?

Food provide us energy and nutrients needed for vital processes like growth, repair, reproduction and protection.



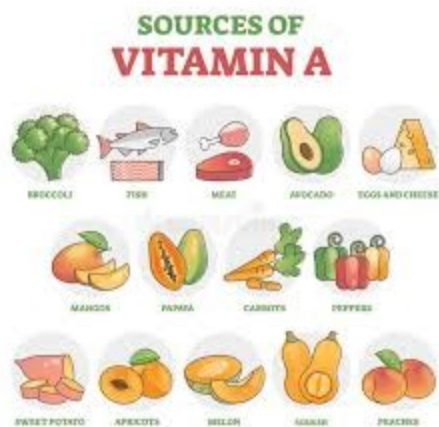
2. Name major food groups.

Food is classified into following major groups: carbohydrates, proteins, fats, vitamins and minerals.



3. Name sources of vitamin A.

Carrot, cod liver oil etc are sources of vitamin A.



4. Enlist the sources of vitamin C and D.

Source of Vitamin C: Citrus fruits orange, guava, broccoli, strawberry etc are sources of vitamin C.



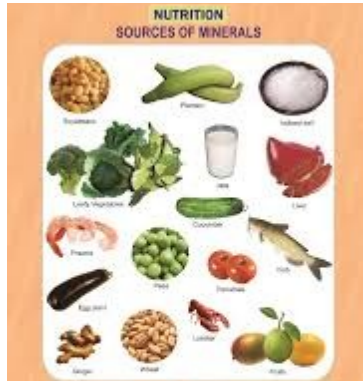
Source of vitamin D: milk, cold liver oil soybean are sources of vitamin D.



Vitamin D

5. List sources of minerals.

Minerals are found in milk, meat, grains, vegetable, fruits, eggs, fish etc.



6. What is unbalanced diet?

A diet lacking one or more essential components of food needed by a person is called unbalanced diet.



7. Is table salt a mineral?

Table salt is mineral due to presence of sodium in it.



3.3 Answer the following questions.

1. What is balanced diet? Describe importance of balanced diet.

A balanced diet means eating the right amount of different nutrients for your age and lifestyle. It's important because it keeps you healthy by making sure



2. Describe sources and functions of carbohydrates.

Carbohydrates, like sugars and starches, are found in foods like honey, fruit, milk, wheat, rice, potatoes, and tomatoes. They're the body's main source of



3. Describe sources and functions of proteins.

Protein-rich foods include meat, eggs, fish, beans, milk, chicken, nuts, peas, and seeds. Proteins are essential for growth, repair, and reproduction; they're the body's building blocks.

SOURCES OF PROTEINS



4. State sources and functions of vitamins.

Nam e	Source	Function
A	Carrots, cod liver oil etc	Keeps eyes healthy and protects from night blindness
B	Banana, fish, wheat, fresh meat, vegetables, grains etc	Protects from beriberi and diseases of nervous system
C	Citrus fruits orange guava, broccoli, strawberry etc	Keeps skin healthy and protects from scurvy swollen and bleeding gums
D	Milk, cod liver, soybean, etc	Protects from rickets. a disease in which bones become soft and weak.
E	Eggs, dry fruits, peas, etc	Keeps muscles healthy and protect them from diseases.
K	Milk, leafy vegetable, fruits.	Essential for blood clotting.

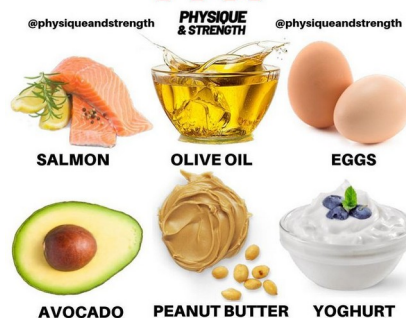
5. Explain the sources and functions of minerals.

Minerals are found in milk, meat, grains, vegetables, fruits, egg, fish etc. They are needed for formation of body tissues like bones, teeth and blood cells.

6. Describe sources and functions of fats.

We get fats from both animals (milk, butter, ghee, cheese, animal fat, fish oil) and plants (olive oil, corn oil, coconut oil, mustard oil). Fats insulate us, protect our organs, keep us warm, and act as a backup energy source when

THE BEST SOURCES OF **FAT**



we don't have enough carbohydrates.

7. What is a food pyramid? Explain.

A food pyramid is a chart that shows how much of different foods we should eat. The foods at the bottom we should eat the most of, and the foods at the

top we should eat the least of.

8. Why is it important to eat food from all food groups?

Since different foods have different nutrients, a healthy daily diet (a balanced diet) needs to include various food groups to ensure you get all the nutrients you need.



3.5 Constructed Response Questions.

1. What food can people eat to prevent them getting scurvy?

Eat citrus fruits, orange, guava, broccoli, strawberry.



2. What food can people eat to prevent them getting rickets?

Use Milk, cod liver and soybean to prevent from getting rickets.



3. What does body need the following for?

- a. Glucose: body needs glucose for quick energy
- b. Fats: To keep vital organs and skin protected
- c. Proteins: for growth , repair and other vital functions.

4. A diet containing some nutrients too much and some too little, is called unbalanced diet.

(a) What can happen if someone takes unbalanced diet for a long time?

He may become sick and affect the health of body.



(b) What will happen if there is deficiency of iron in the food?

It will cause anaemia.



(c) What will happen if there is deficiency vitamin C?
Bleeding of gums



5. Some people do not eat meat

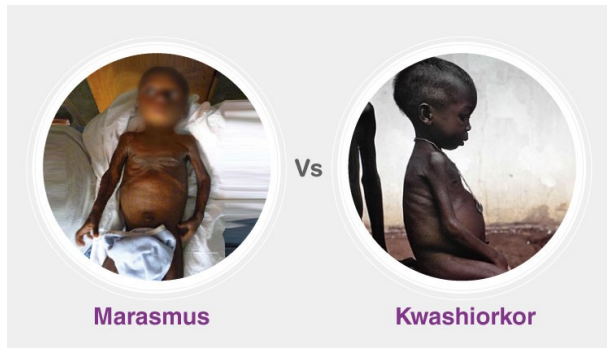
(a) What should they eat to meet the deficiency of proteins?

They should eat soybean dry fruits



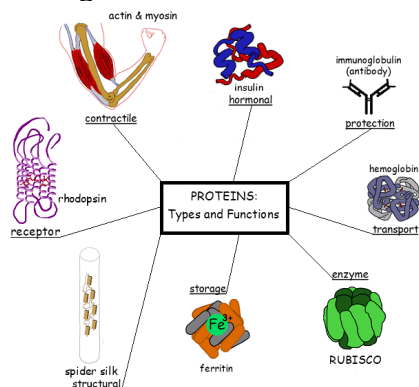
(b) How may they suffer if they take protein deficient food for a long time?

They may develop protein deficiency diseases like Kwashiorkor and Marasmus.



(c) Name five proteins found in human body.

Collagen, antibodies, keratin, enzymes, haemoglobin



16 Investigate the disorders caused by deficiency of the following nutrients in human diet:

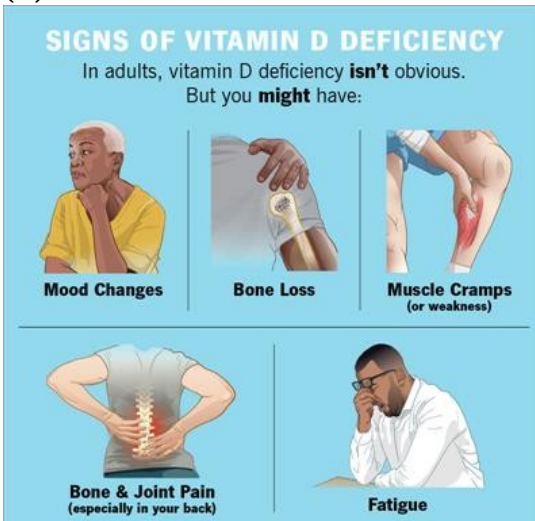
(a) **Vitamin A:** effect vision



(b) **Vitamin C:** causes bleeding of gums



(c) **Vitamin D:** causes weakness and softness of bones



(d) **Iron:** causes anaemia



(e) **Calcium:** causes weakness of bones (rickets)



Unit-4 Human Digestive System

QUESTIONS

4.1 Fill in the blanks.

1. Salivary glands secrete _____ saliva
2. The end products of digestion of proteins are, _____ amino acid
3. Finger-like projections in the lining of small intestine are called _____ villi
4. Bile is secreted by _____ liver
5. The function of the gallbladder is to store _____ Bile

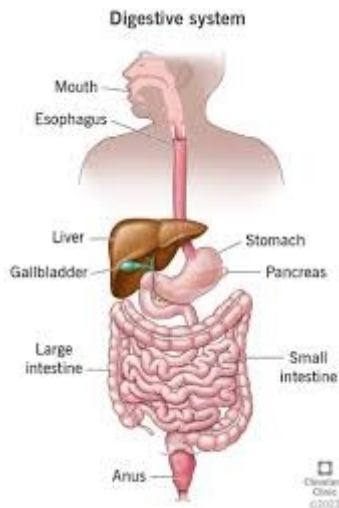
4.2 Encircle the correct option.

1. A part of the digestive system which is not in contact with food is:
 - a. small intestine
 - b. stomach
 - c. liver**
 - d. Large intestine
2. In humans, most of digestion takes place in:
 - a. mouth
 - b. oesopl
 - c. stomach**
 - d. small intestine
3. Saliva is produced in:
 - a. oral cavity**
 - b. oesopl
 - c. stomach
 - d. small intestine
4. The food digested by the enzyme "sucrase" belongs to nutrients group:
 - a. carbohydrates**
 - c. oils
 - d. proteins
5. The muscular tube leading from oral cavity to stomach:
 - a small intestine
 - b. intestine
 - c. oesophagus**
 - d. bile duct
6. Germs present in food are killed in stomach by:
 - a. hydrochloric acid**
 - b. citric acid
 - c. carbonic acid
 - d. none of these
7. Digestive enzymes convert starch into:
 - a. fatty acids
 - b. vitamins
 - c. minerals

- d. simple sugar**
8. Proteins are digested into:
- a. fatty acids
 - b. amino acids**
 - c. glycerol
 - d. glucose
- a. villi
9. Digested food is absorbed into blood through the walls of:
- a. villi**
 - b. large intestine
 - c. stomach
 - d. bile duct
10. Water and salts from undigested food are absorbed into blood through walls of:
- a. small intestine
 - b. large intestine**
 - c. villi
 - d. gallbladder

1. Define digestion.

The process of breaking down food into substances the body can use for energy, tissue growth, and repair



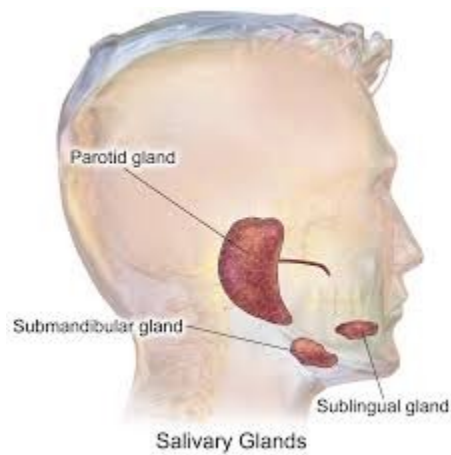
2. How is chewing important in human digestive system?

It breaks down food into smaller pieces that are easier to swallow and digest.



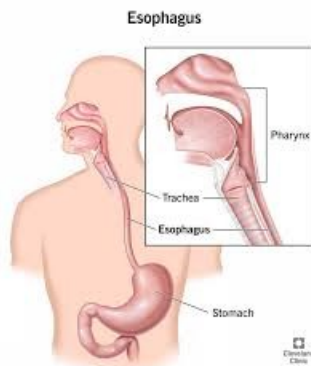
3. Name the liquid which is secreted by salivary glands.

Saliva



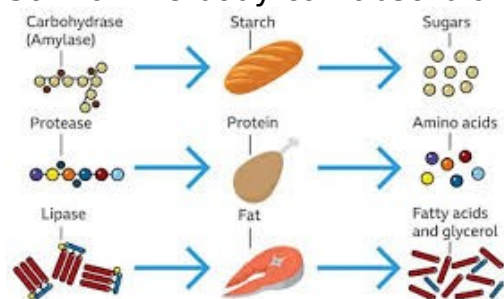
4. Describe the role of oesophagus in human digestive system.

To transport food from the mouth to the stomach



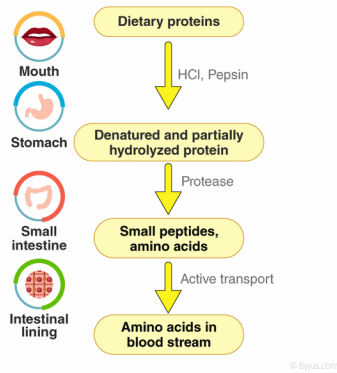
5. Why do carbohydrates, fats and proteins need to be broken down into smaller molecules?

So that the body can absorb and use them



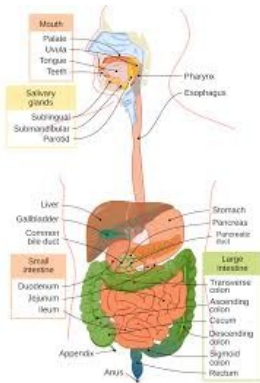
6. What are the process of digestion of carbohydrates, proteins and fats?

Carbohydrates into sugars. Proteins into amino acids. Fats into fatty acids and glycerol.



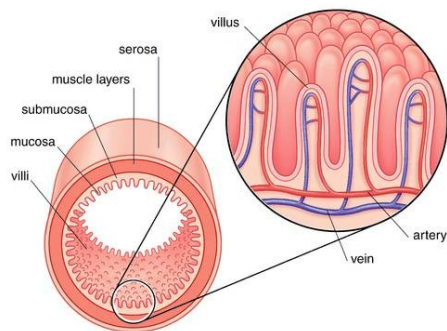
7. What structures secrete enzymes necessary for digestion in man?

Salivary glands, stomach, pancreas, liver and small intestine



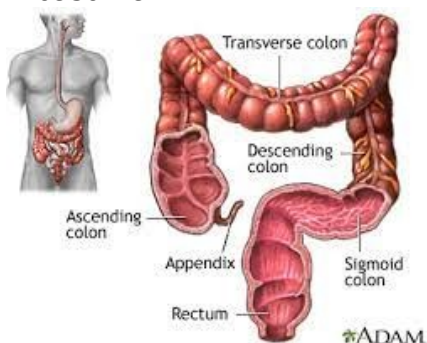
8. How are villi important for absorption?

Villi are small finger-like projections found on the surface of the small intestine that assist in the absorption of digested food



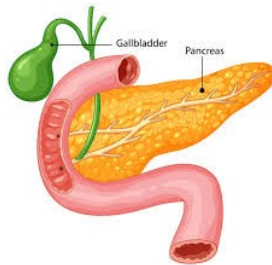
9. How is large intestine important in digestive system of man?

Some water and mineral absorbed into blood through walls of large intestine

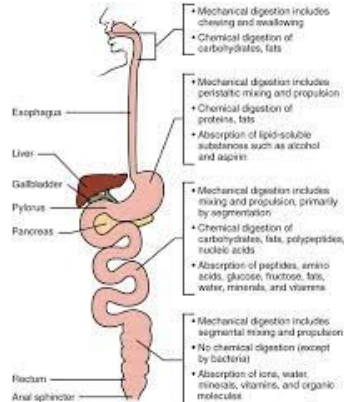


10. Write the functions of gall bladder.

Stores and concentrates bile from the liver



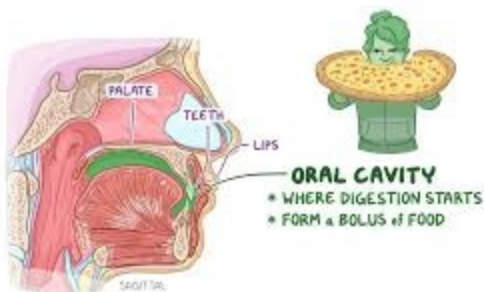
1. Describe alimentary canal and its different parts.



The alimentary canal (or digestive system) is a tube that breaks down food and absorbs nutrients. Key parts include:

1. **Mouth:** Where food enters and is chewed.
2. **Stomach:** A sac that mixes food with digestive juices, turning it into a liquid.
3. **Small Intestine:** A long tube where most nutrients are absorbed. It has tiny "fingers" (villi) to help with this.

2. What happens to food in oral cavity?



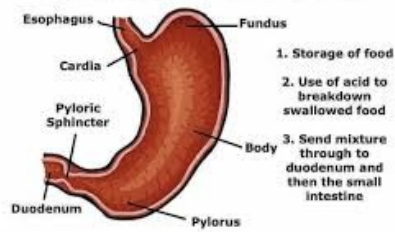
In your mouth, food is:

1. **Chewed:** Teeth break it into smaller pieces.
2. **Moistened:** Saliva makes it easier to swallow.
3. **Partially Digested:** Saliva starts breaking down carbohydrates

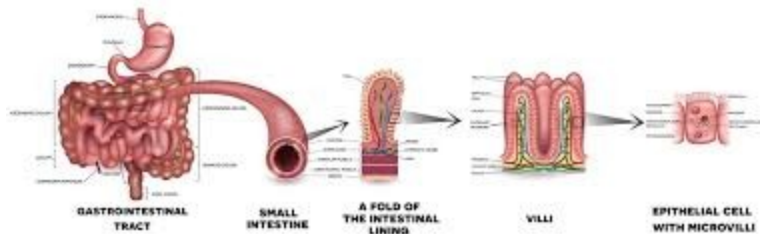
3. Describe the functions of stomach in human digestive system

In the stomach, food is mixed with enzymes and acid. The acid kills germs, and the enzymes break down proteins. After about four hours, the partially digested food moves to the small intestine.

STOMACH FUNCTION

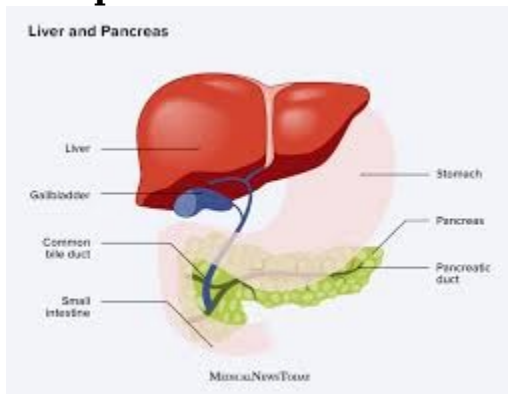


4. Explain the role of small intestine in digestion and absorb, son of food,



Pancreatic enzymes finish digestion in the small intestine. Villi, tiny finger-like projections, absorb digested food into the bloodstream. This absorption happens through the villi walls and into their blood vessels.

5. Explain the functions of liver, bile, and pancreas.

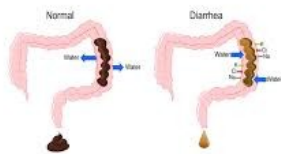


Liver is a gland which produces bile. Bile is stored in gallbladder. Bile, entering the small intestine through the bile duct, aids in fat digestion. The pancreas makes pancreatic juice containing enzymes that fully digest food in the small intestine.

6. Write note on:

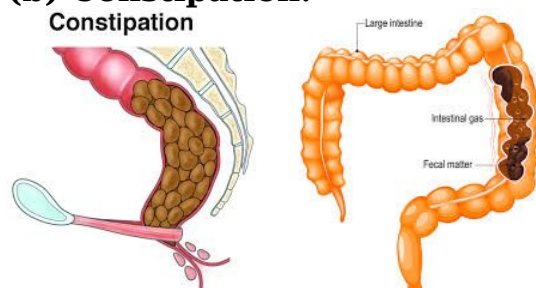
(a) diarrhea:

Diarrhea



When bad food (contaminated or with bacteria) gets into your large intestine, it makes the muscles there work really fast. This makes you poop a lot, and the poop is watery because your body can't absorb the water properly. Losing too much water and salts like this is called dehydration. To get better, you need to drink a special mix of salt and sugar (ORS), and eat healthy things like fruits and vegetables. It's also important to drink clean (boiled) water and eat freshly cooked food. If you're still sick after trying these things, you need to see a doctor.

(b) Constipation:

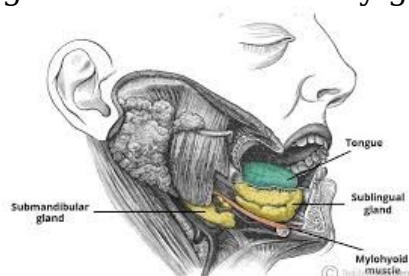


If poop moves too slowly through your large intestine, your body absorbs too much water, making it hard and dry. This is constipation, and it can be painful. To help, you can take medicine to soften your poop, drink lots of water, and eat foods with fiber, like fruits and vegetables.

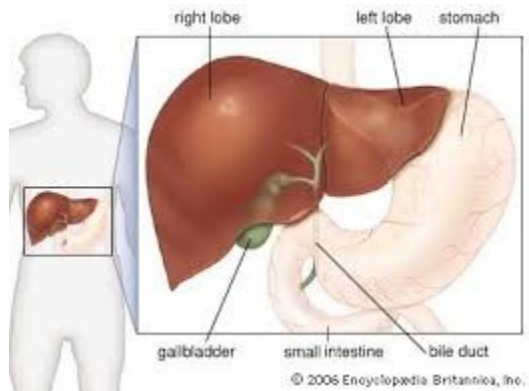
15 Constructed Response Questions

1. Briefly describe the role of the following in the digestion of food

(a) Oral cavity: mouth leads to oral cavity which contains teeth to cut and grind food and salivary glands releasing saliva to make food soft.



(b) Liver: liver is gland, which produce bile. Bile is stored in gallbladder. When it enters the small intestine it helps in digestion of fats.

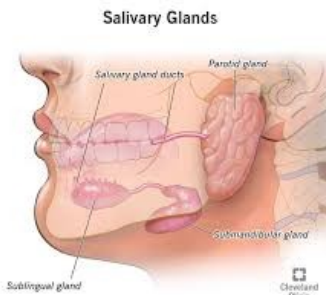


(c) Pancreas: pancreas produce pancreatic juice. Pancreatic juice enter the small intestine where it helps in complete digestion of food.



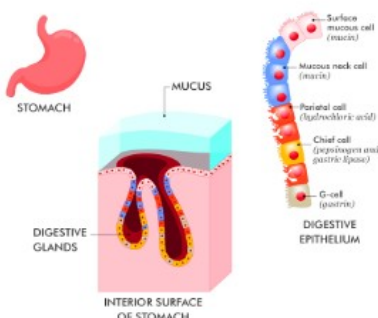
2. Outline the functions of the following:

(a) Salivary glands: Saliva in your mouth helps start digestion. The stomach uses gastric juice to digest food. The liver makes bile.



(b) Gastric glands:

GASTRIC GLANDS



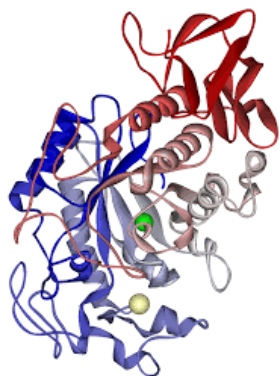
Gastric glands secrete gastric juice in stomach.

3. Proteins which speed up biochemical reactions are called enzymes. State the functions of the following enzymes:

(a) **amylase**: in digestive amylase break down carbohydrates.

(b) **protease**: protease digest the protein molecule.

(c) **lipase**: lipase break down the molecules of lipids in food.



Unit-5 Matter as Particles

QUESTIONS

Encircle the correct options.

1. There are strong forces of attraction between the particles of:
 - a. **solids**
 - b. liquids
 - c. gases
 - d. all of these
2. Solid and liquid objects cannot be compressed easily as their particles are:
 - a. having spaces among them
 - b. loosely packed
 - c. **lacking spaces among them**
 - d. scattered irregularly

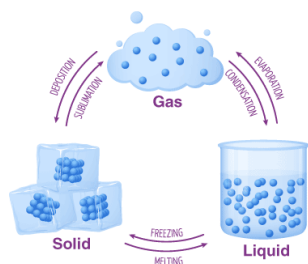
3. The process of changing gas into liquid:
 - a. melting
 - b. evaporation
 - c. freezing
 - d. condensation**
4. Changing of substance directly from solid state to gaseous state on brating is termed as:
 - a. boiling
 - b. sublimation**
 - c. melting
 - d. diffusion
5. Materials that don't take the shape of the container:
 - a solids**
 - b. liquid.
 - c. gases
 - d.all of these
6. When a gas condenses, it becomes a:
 - a. solid
 - b. liquids**
 - c. crystal
 - d. another gas
7. When a solid object is heated, its particles begin to:
 - a.vibrate fast**
 - b.vibrate slowly
 - c.stop vibrating
 - d.move freely
8. Boiling point of water is:
 - a.0C
 - b.0F
 - c.100C**
 - d.100F
9. Movement of particles from an area where they are more to an area where they are less:
 - a. boiling
 - b. evaporation
 - c. diffusion**
 - d. sublimation
10. Which of the following is opposite to boiling?
 - a. evaporation
 - b. freezing**
 - c. melting
 - d. condensation

12 Give short answers.

1. How can we change the physical state of matter?

CHANGING STATES OF MATTER

BYJU'S
The Learning App



Melting, boiling, condensation, freezing, evaporation, etc are the processes involving change in physical states of matter.

2. How do liquids differ from gases?

Comparison	Solids	Liquids	Gases
Particles	Tightly packed	Loosely packed	Independent
Shape	Fixed	Not fixed	Not fixed
Volume	Fixed	Fixed	Not fixed
Rigidity	High	Less	Negligible
Forces	Strongest	Intermediate	Weakest
Fluidity	Not a chance	Yes	Yes
Compressibility	No	Slight	High
Density	High	Low	Very low
Diffusibility	No	Less	High
Kinetic energy	Low	Intermediate	High
Examples	Crystalline and Amorphous solids	All fluids	O ₂ , CO ₂ , SO ₂ , NO ₂ , etc

Liquids have particles close together but not in a fixed pattern, and they have strong (but not as strong as solids) attractive forces. Gases have particles far apart with very weak attractive forces, allowing them to move freely. So, liquids are more ordered than gases and have stronger particle interactions..

3. How do solids differ from liquids with regard to particles arrangement?

In solids, particles have an orderly arrangement where they are present tightly packed with each other.

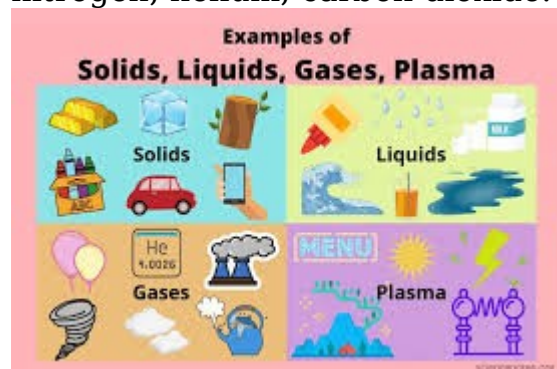
In liquids like water, the particles are present very close to one another, but, they are not regularly arranged

4. A liquid on cooling is converted into its solid state. What will happen to a solid when it is cooled?

Cooling a solid decreases the motion of its particles. A decrease in motion of particles allows the attraction between the particles to bring them a more close together.

5. Write down the names of five liquids and five gases which you know.

Liquid: water, milk, blood, gasoline, mercury. Gases: natural gas, oxygen, nitrogen, helium, carbon dioxide.

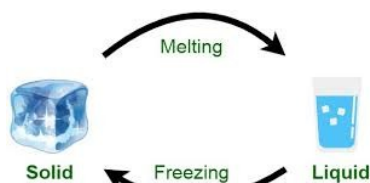


5.3 Differentiation the following:

1. Melting and freezing

Melting: Solid becomes liquid when heated.

Freezing: Liquid becomes solid when cooled.



2. Boiling and condensation

Boiling: Liquid turns into gas when heated.

Condensation: Gas turns into liquid when cooled.



3. Evaporation and sublimation

Evaporation: Liquid slowly turns into a gas at its surface.

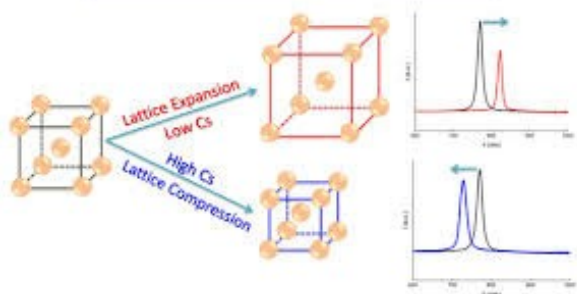
Sublimation: Solid directly turns into a gas when heated.



4 Diffusion and compression

Diffusion: Particles move from a crowded area to a less crowded area.

Compression: Squeezing a gas into a smaller space.



Unit-6 Elements and Compounds

QUESTIONS

6.1 Encircle the correct option,

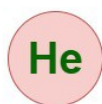
1. Which one of the following is a metallic element?
 a. hydrogen
 b. helium
c. lithium
 d. carbon
2. Which one of the following is a non-metallic element?
 a. iron
 b. aluminum
 c. beryllium
d. oxygen
3. Which one of the following is a metalloid element?
 a. gold
 b. boron
c. silver
 d. nitrogen
4. Choose an atom which can exist independently at room temperature?
a. Cu
 b. Na
 c. O
 d. Ne
5. How many hydrogen atoms are present in 1 molecule of ammonia?
 a. 1
 b. 2
c. 3
 d. 4
6. How many atoms are present in one molecule of helium?
a. 1
 b. 2
 c. 3
 d. 4
7. $\text{C}_6\text{H}_{12}\text{O}_6$ is the formula of glucose. How many oxygen atoms are there in one molecule of glucose?
 a. 3
b. 6
 c. 9
 d. 12
8. Which one of the following is an element?
a. O_2
 b. CO_2
 c. CH_4
 d. H_2O
9. Number of neutrons in helium:
 a. 1
b. 2
 c. 3
 d. 4
10. This picture indicates the structure
 a. an atom
 b. an element
c. a compound
 d. none of these
11. Water, carbon dioxide, ammonia and methane are examples of:
 a. atoms
 b. elements
c. compounds
 d. none of these
12. Hydrogen, helium, carbon, nitrogen and oxygen are examples of:
 a. atoms
b. elements
 c. compounds
 d. mixtures

6.2 Write short answer.

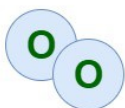
1. Define element.

An element is a substance which consists of only one kind of atoms. It is the simplest form of matter

Elements



Helium



Oxygen

Contains only
one kind of atom

2. Write the names and symbols of any two metals.

Magnesium Mg

Iron Fe



3. Write the names and symbols of any four non-metals

H is the symbol of hydrogen and

Na is the symbol of sodium taken from its Latin name (Natrium).

Atomic number (Z)

First Twenty Elements				
1 H Hydrogen	2 He Helium	3 Li Lithium	4 Be Beryllium	5 B Boron
6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
11 Na Sodium	12 Mg Magnesium	13 Al Aluminum	14 Si Silicon	15 P Phosphorus
16 S Sulfur	17 Cl Chlorine	18 Ar Argon	19 K Potassium	20 Ca Calcium

4. Write the names and symbols of any three noble gases

Hydrogen, Helium and Lithium

5. Write the names and formulae of any five compounds

Ammonia (NH_3), methane (CH_4), sodium chloride (common salt) (NaCl) and sugar ($\text{C}_{11}\text{H}_{22}\text{O}_{11}$)

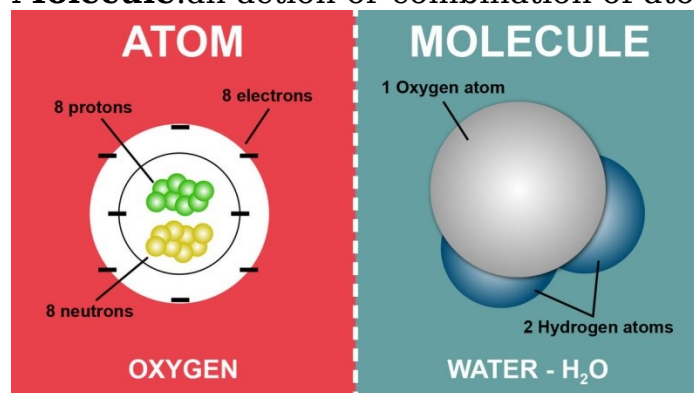
Compounds	Formula
Carbon dioxide	CO_2
Magnesium Oxide	MgO
Sodium Chloride	NaCl
Copper Sulphate	CuSO_4
Sulphuric Acid	H_2SO_4
Nitric Acid	HNO_3
Sodium Hydroxide	NaOH
Sulphur dioxide	SO_2
Water	H_2O
Ammonia Gas	NH_3
Sodium Chloride	NaCl
Potassium Chloride	KCl
Carbon dioxide	CO_2
Magnesium Chloride	MgCl_2
Hydrogen Sulphide	H_2S
Methane	CH_4
Hydrochloric acid	HCl

3 Differentiate the followings:

1. Atom and molecule

Atom: the smallest particle of matter which takes part in chemical reaction

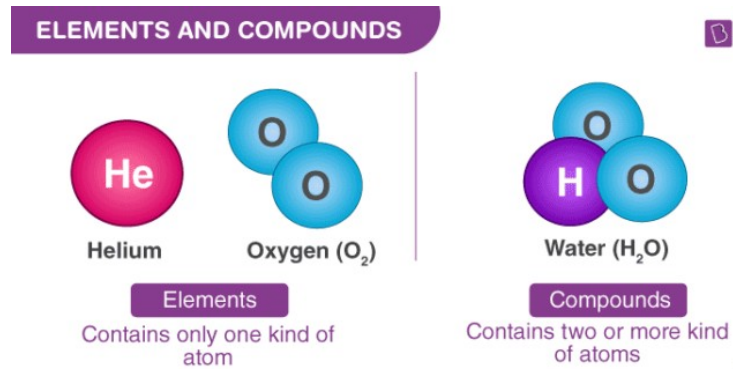
Molecule: an action or combination of atoms which can exist independently



2. Element and compound

Element: a pure substance consisting of only one kind of atoms

Compound: a pure substance consisting two or more different kinds of atoms.



3. Metal and non-metal

Metal: metals are shiny solids. They have high melting points. They are good conductors of electricity.

Non-Metal: non metals are dull substance having relatively low melting points. They are poor conductors of heat and electricity.

Differences Between Metals & Non-metals DewWool



4. Metalloid and noble gas

Metalloid: the group of element whose properties are responsible with metal and non metals are called metalloids.

Noble Gas: the elements of groups 18 are known as noble gases. These are non reactive in nature

Metals, Nonmetals, and Metalloids

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	

metals

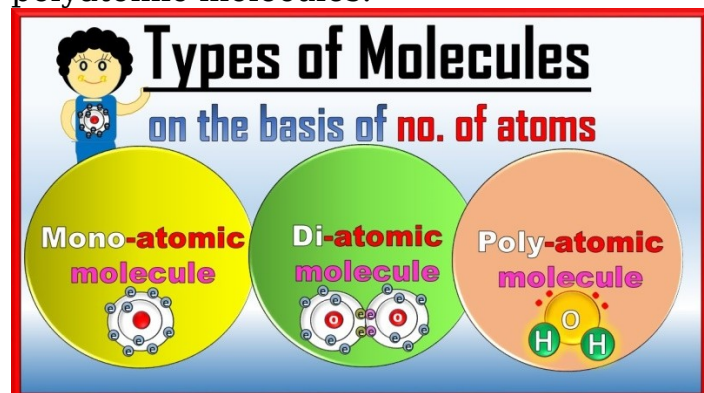
nonmetals

metalloids

5. Monoatomic molecule and polyatomic molecule

Monoatomic molecule: a molecule consisting of one atom only is called monoatomic

Polyatomic molecule: a molecule consisting of many atoms are called polyatomic molecules.

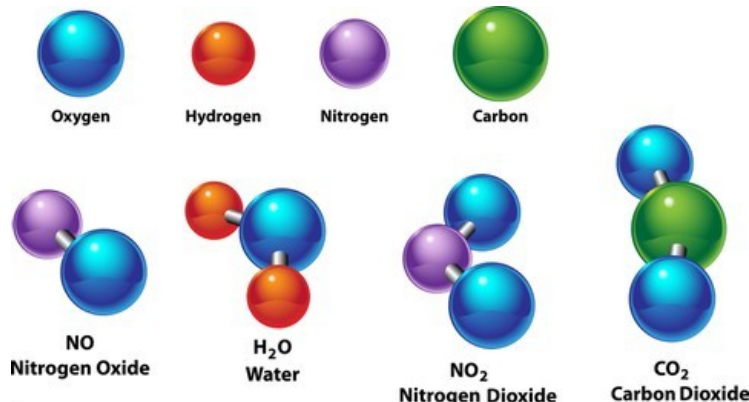


6 Constructed Response Questions.

1. N, O, CO, and H₂O different substances. are chemical formulae representing the molecules of

(a) Which of these are the elements and which are the compounds?

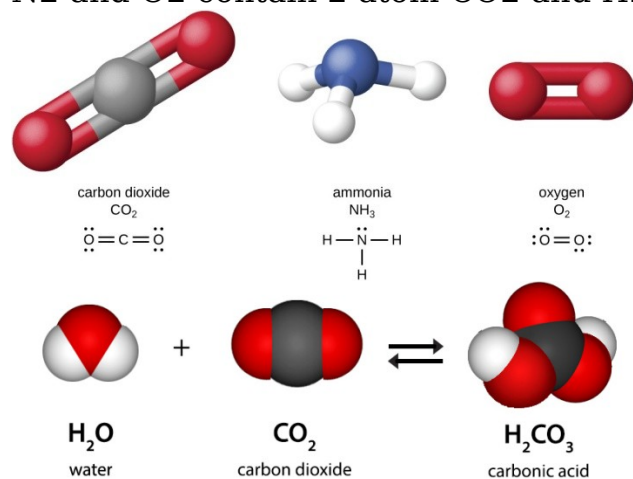
N₂ and O₂ are elements while CO₂ and H₂O are compounds



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(b) How many atoms are present in each chemical formula?

N₂ and O₂ contain 2 atom CO₂ and H₂O contain 3 atom



(c) Identify the elements present in each chemical formula.

N₂ is nitrogen O₂ is oxygen while CO₂ has carbon and oxygen H₂O contain hydrogen and oxygen

Major constituents of dry air, by volume^[6]

Gas		Volume ^(A)	
Name	Formula	in ppmv ^(B)	in %
Nitrogen	N ₂	780,840	78.084
Oxygen	O ₂	209,460	20.946
Argon	Ar	9,340	0.9340
Carbon dioxide	CO ₂	400	0.04 ^[7]
Neon	Ne	18.18	0.001818
Helium	He	5.24	0.000524
Methane	CH ₄	1.79	0.000179

2. Elements listed in Group-18 of the Periodic Table are known as noble gases.

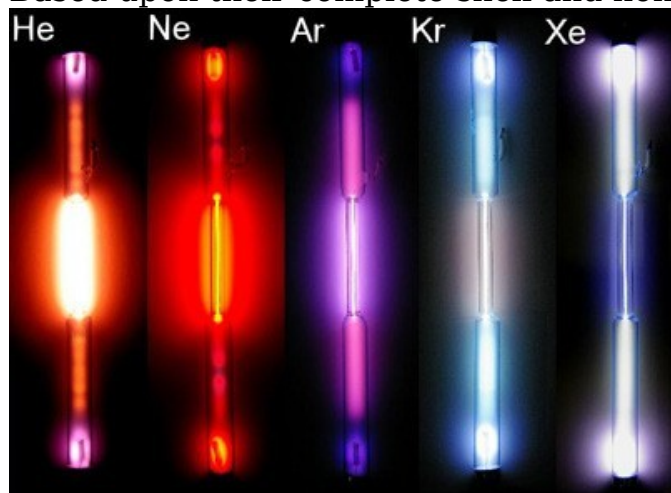
(a) Why are these called noble gases?

Element of group 18 are called noble gas because they are stable not reacting with other

Periodic Table of the Elements

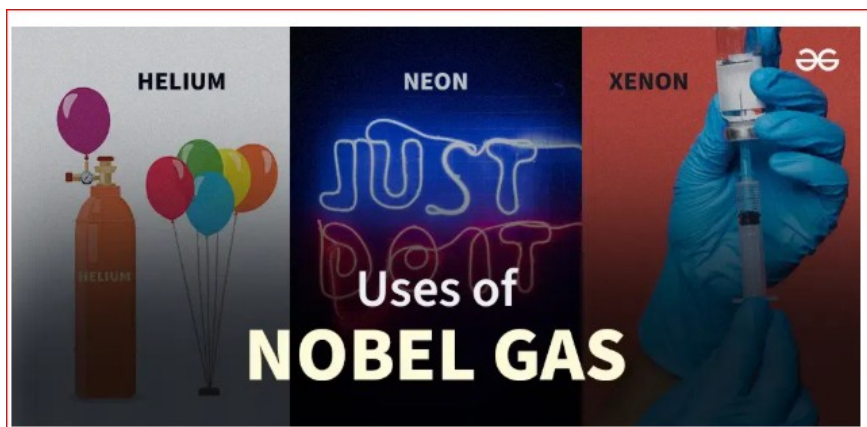
(b) How are noble gases different from other elements?

Based upon their complete shell and non reactive nature



(c) Is there any use of noble gases in daily life?

Yes there are many noble gases in daily life



6.5 Investigate:

1. The composition, occurrence and properties of five metals, five non-metals and five compounds.



Metals			
Metals	Compound	Occurrence	Properties
Iron	Fe	Earths Crust	Conduct heat and electricity
Copper	Cu	Earths Crust	Conduct heat and electricity
Silver	Ag	Earths Crust	Conduct heat and electricity
Gold	Au	Earths Crust	Lustrous
Nickel	Ni	Earths Crust	Lustrous

Non-Metals

Metals	Compound	Occurrence	Properties
Hydrogen	Fe	Air	Color less gas tasteless gas
Nitrogen	N	Air	Color less gas
Oxygen	O	Air	Color less gas
Bromine	Br	Earths Crust and sea water	Reddish brown color
Sulphur	S	Volcanic areas	Color less gas

Compounds

Metals	Compound	Occurrence	Properties
water	Hydrogen=2 Oxygen=1	Air Ocean, earth crust	Universal solvent
Carbon dioxide	Carbon=1 Oxygen=2	Air	Color less gas
Methane	Carbon=1 Hydrogen=4	Natural gas	Burns readily in air
Sodium chloride	Sodium=1 Chloride=1	Earths Crust	White crystal
Ammonia	Nitrogen=1 Hydrogen=3	Earth	Corrosive

2. The uses of five metals, five non-metals and five compounds.

Use of Metals

Metal	Uses
Iron	Used for making bridges ,bicycle etc
Copper	Used in electrical equipment such as wiring and motion.
Silver	Used for jewellery and silver tableware.
Gold	Used for making coins and jewellery.

Use of Non-Metals

Metal	Uses
Hydrogen	Used in refining petroleum..
Nitrogen	Used for preparing fertilizing.
Oxygen	Used for steel melting refining.
Bromine	Used for agriculture.

Use of Compound	
Compound	Uses
Water	Used as solvent in chemical industries.
Carbon dioxide	Used as refrigerator.
Methane	Used as fuel.
Sodium chloride	Used as table salt.

Unit-7 Mixtures

QUESTIONS

7.1 Encircle the correct option.

1. Select the one that is different from the others.

- a. ice
- b. water
- c. sodium**
- d. steam

2. Which is true for a compound?

a. a substance consisting of two or more elements loosely mixed together in a fixed ratio by mass.

b. a substance consisting of two or more elements chemically combined in a fixed ratio by mass.

c. a substance consisting of two or more elements physically mixed in any ratio by mass.

d. a substance consisting of two or more metals mixed in their molten form.

3. Which one of the following is not an element?

- a. chlorine
- b. sulphur
- c. sugar**
- d. zinc

4. Which one of the following is non-metal?

- a. phosphorus**
- b. aluminum
- c. copper
- d. magnesium

5. Which one of the following statement is false?

a. carbon, oxygen, hydrogen and silver are elements.

b. water is made up of hydrogen and oxygen.

c. an element is a substance, which can be decomposed by heating.

d. gold is a metal.

6. Which one of the following is matter?

- a. heat
- b. rain**
- c. sound
- d. light

7. Which one of the following is mixture?

- a. air**
- b. water
- c. carbon dioxide

d.oxygen

8. Which one of the following is a homogeneous mixture?

a. soil

b. steel

c. graphite

d. iron

9. Which one of the following is a solution?

a. rock

b.copper

c. diamond

d. brass

10. Technique used for separation of coloured components of their mixture

a. distillation

b. chromatography

c. sublimation

d. crystallization

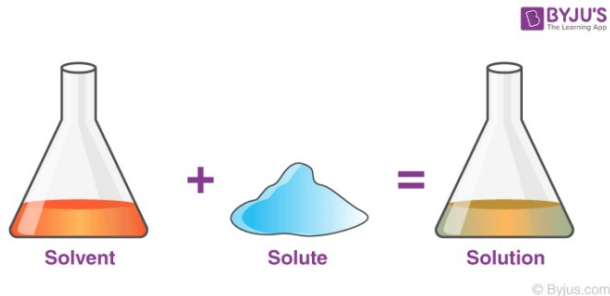
7.2 Give short answers.

1. Define a solute.

A homogeneous is called a solution . A solution, which is prepared by mixing substances, is called a binary solution

2 Define a solution

A solute is the substance that dissolves in a solution. It's the smaller part, like sugar in sugar water.



3. Give five examples of heterogeneous mixture.

A heterogeneous mixture isn't the same throughout. Think of salad or a rock – you can see different parts.



Give five examples of homogeneous mixture.

Homogeneous mixtures are uniform throughout, like sugar dissolved in water. Heterogeneous mixtures have visibly different parts, like a salad.

Give three examples of alloys.

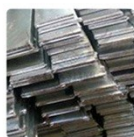
Steel, brass, red gold, white gold, sterling silver, silicon steel



Zinc alloy



Brass



Iron



Stainless steel



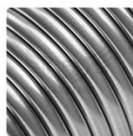
Aluminium



Fine gold



Sterling silver



Stainless iron

Differentiate between:

Homogeneous mixture and heterogeneous mixture

Homogeneous mixture: A mixture having uniform composition and properties throughout the sample is called homogeneous mixture. Homogeneous mixtures also called solutions. Air, sugar water, rain water, vinegar, coffee, steel and other alloys of different metals with other metals or non-metals are the examples of homogeneous mixtures or solution

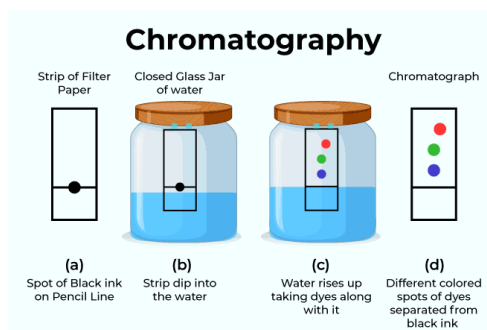
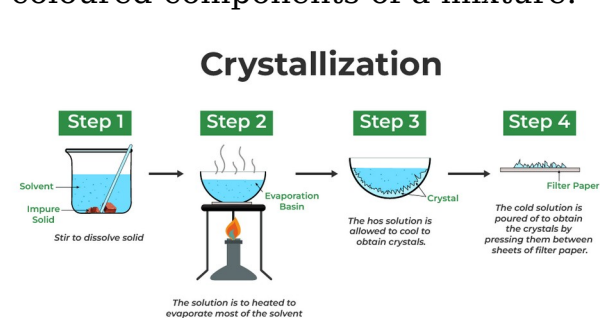
Heterogeneous mixture: A mixture whose composition and properties are not uniform throughout the sample is called heterogeneous mixture. Salad, sandwich, pizza, mixture of sugar crystals and sand, concrete slab, rock, etc., are the examples of heterogeneous mixtures



Crystallization and chromatography

Crystallization: In this process, the solvent is made to evaporate by heating slowly and the dissolved solid is crystallized out

Chromatography: Chromatography is a technique used for separation of coloured components of a mixture.



Compound and mixture

Compound:

Mixture:

Mixture	Compound
1. A mixture is an impure matter.	1. A compound is a pure matter.
2. No chemical reaction occurs when a mixture is formed.	2. A chemical reaction occurs when a compound is formed.
3. Its composition may not be uniform.	3. Its composition is uniform.
4. Its constituents are not chemically combined.	4. Its constituents are combined chemically.

Compound



Common Salt (NaCl)

Mixture

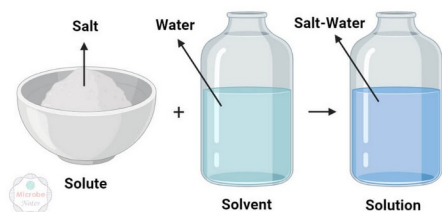


Jellies

Solute and solvent

Solute: The solute is a substance that dissolves. In a binary solution, solute is that component of the solution which is present in smaller quantity. e.g. In a 5% sugar solution in water, sugar is the solute.

Solvent: The solvent is the substance in which the solute or solutes dissolve and it forms the bulk of the solution

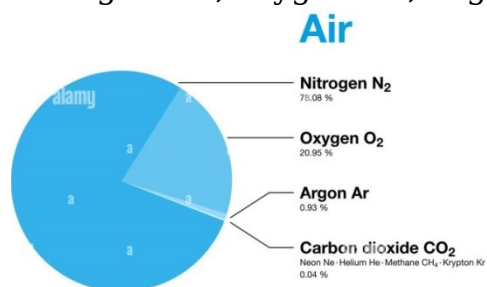


7.4 Constructed Response Questions

1. Air is a mixture.

(3) Enlist the elements present in the air

Nitrogen N₂, oxygen O₂, Argon Ar



(b) Enlist the compounds present in the air

Carbondioxide Co2, sulphure dioxide Sp2, nitrogen oxide etc are present in air

(c) Enlist the impurities (pollutants) of the air

Carbon dioxide CO_2 , sulphur oxide SO_2 , nitrogen oxide, chlorofluorocarbon and dust particles are

2. Briefly describe the importance of the following in the air.

(a) Nitrogen

Nitrogen of nitrogen used as fertilizer

(b) Carbon dioxide

It is needed for photosynthesis

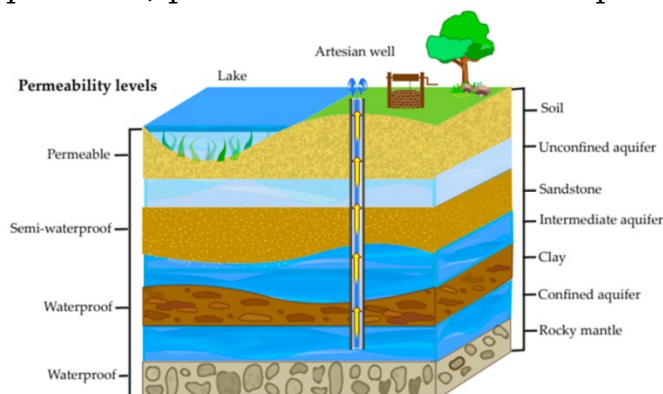
(c) Oxygen

It is needed for respiration.

3. Underground water is a mixture of different substance.

(a) Name the components of this mixture.

Ground water is mixture of different metals, ions, rocks, dust, sand particles, petroleum constituents impurities.



(b) How can we filter the underground water for making it fit for drinking?

Ground water can be filter by the following methods to make it fit for drinking by chlorination, boiling, reverse osmosis plant.



4. Metals are mixed with other elements for making alloys.

(2) What type of mixture alloys are?

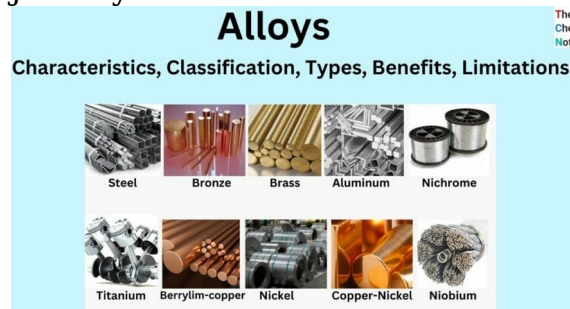
Alloys are the homogeneous mixtures of some metals with other elements. Alloys are formed by melting metals and other elements and mixing their molten forms which are then cooled and solidified



(b) Describe the composition and use of different alloys.

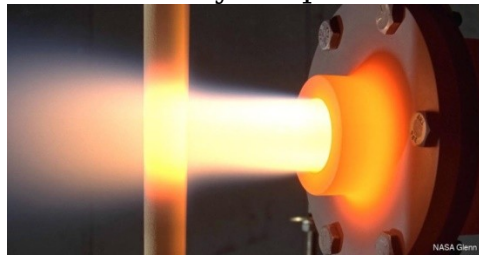
Stainless steel is an alloy of iron, chromium and nickel . It is very strong and do not rust. It is used to make cooking pots, surging tools, bodies of automobiles

Brass is an alloy of copper and zinc. It is used to make pipes, nozzles and jewelry



(c) Why do we make alloys?

We form alloys to produce desired characteristics in required products.



5. Identify the solvent in the following:

- (a) Air: nitrogen is solvents
- (b) Steel: iron is solvent
- (c) Brass: in brass copper is solvent

Unit-8 Energy

QUESTIONS

8.1 Encircle the correct option.

1. Temperature of an object is the measure of of its particles:

- a gravitational potential energy
- b. strain energy

c. kinetic energy

d. sound energy

2. When we drill a hole in an object, which of the following forms of kinetic energy is useful to us?

- a sound
- b. beat
- c. light

d. mechanical energy

3. Our food is a source of:

a.mechanical energy

b.chemical energy

c. sound energy

d. electrical energy

4. An example of renewable energy sources:

- a coal
- b. natural gas

c wind

d. petrol

5. During work done, energy is:

- a. produced
- b. destroyed
- c. wasted

d. converted into other form

6. Which of the following is not an energy converter?

a. table

- b. radio
- c. fan
- d. room heater

7. A fruit after its detachment from a tree-stalk begins to convert energy due to its position into:

- a. strain energy
- b. kinetic energy

c. chemical energy

d. electrical energy wastes:

8. The mixture of gases formed by the decay of animals

a greenhouse gas

b. biogas

- c. natural gas
- d. water gas

9. Engine of a vehicle starts working using:

- a. electrical energy
- b. light energy

c. heat energy

d. sound energy

10. During an energy conversion, the total amount of energy:

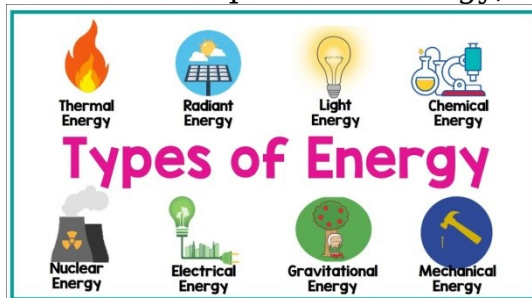
- a. destroys
- b. decreases
- c. increases

d. remains the same

Write short answers.

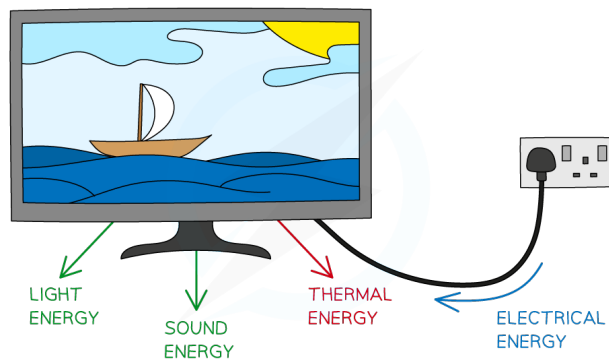
1. Name three forms of stored energy,

Gravitational potential energy, elastic potential energy or strain energy



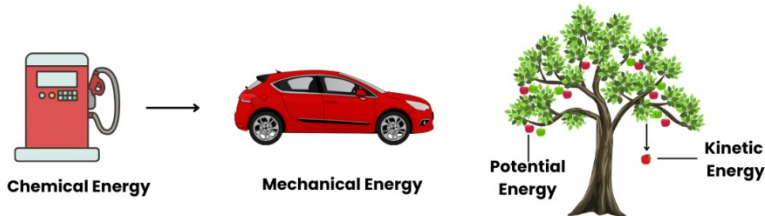
2. Dissipated energy is also called wasted energy. Why?

When we change energy into a useful form, some of it gets scattered into less useful forms. This scattering is called dissipation, and the scattered energy is wasted.



3. Define the law of conservation of energy.

Energy can neither be created nor be destroyed, but, it can be changed from one form to another



4. Where does the energy produced by a dynamo come from?

A dynamo on a bike uses the spinning wheel to make electricity, which powers the bike's lights.

Conversion from Mechanical Energy to Electric Energy using dynamo in bicycle:



Constructed Response Questions

2. Which main energy transfer takes place in the following examples?

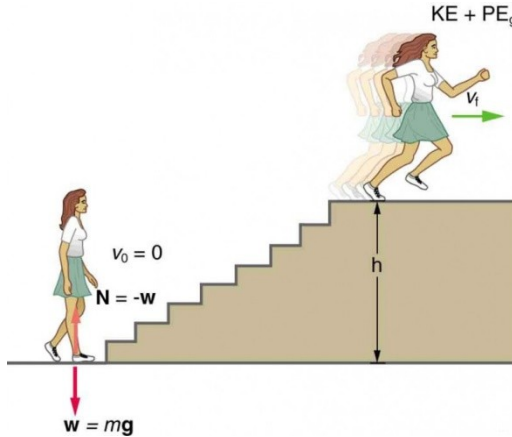
(a) A child kicking a football.

When a child kick a football. It has maximum KE just after it leaves the foot of the child.



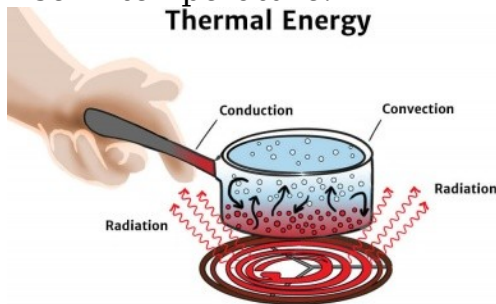
(b) A person walking upstairs.

A person walking upstairs is using their muscular energy in order to overcome the PE and convert it into KE.



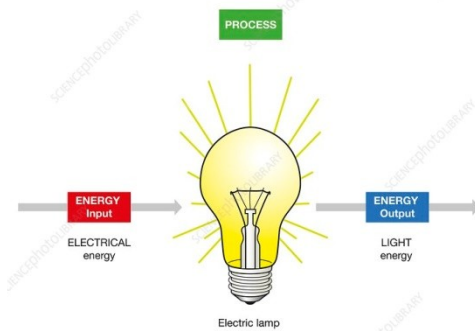
(c) Water being boiled in a kettle.

Boiling water on a stove is an example of thermal energy. Thermal energy is produced when the atoms and molecule in a kettle vibrate faster due to a rise in temperature.



(d) A glowing bulb,

In a glowing bulb electrical energy converted into light and heat energy.



Unit-9 Electricity

QUESTIONS

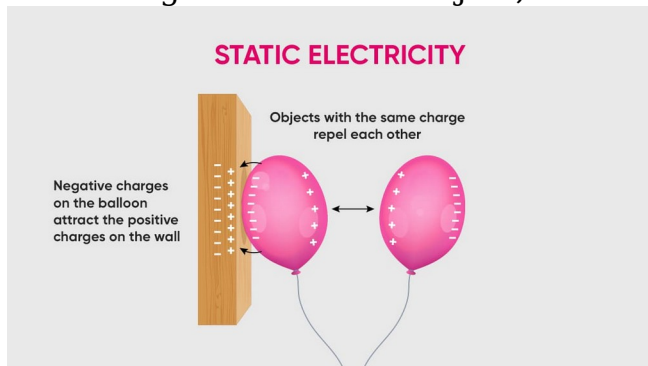
9.1 Encircle the correct option.

1. A positively charged particle:
 - a. electron
 - b. proton**
 - c. neutron
 - d. atom
2. A device that stores chemical energy and converts it into electric energy when. Connected in a circuit:
 - a. electric switch
 - b. bulb
 - c. cell**
 - d. metallic wire
3. A circuit that provides multiple paths to the current to flow:
 - a. series
 - b. parallel**
 - c. open
 - d. short
4. The type of circuit used in domestic wiring:
 - a. series
 - b. parallel**
 - c. open
 - d. short
5. A device used to open or close an electric circuit:
 - a. battery
 - b. bulb
 - c. switch**
 - d. wire
6. Increasing the number of batteries in a series circuit:
 - a. increases the brightness of the bulbs**
 - b. decreases the brightness of the bulbs
 - c. converts the series circuit to parallel circuit
 - d. stops the flow of current through the circuit
7. The current has only one path to flow through:
 - a. series circuit**
 - b. parallel circuit
 - c. open circuit
 - d. close circuit

9.2 Give short answers,

1. What is static electricity?

The charge produced on an object remains there at rest. When the charge at rest is gathered on an object, it is known as static electricity



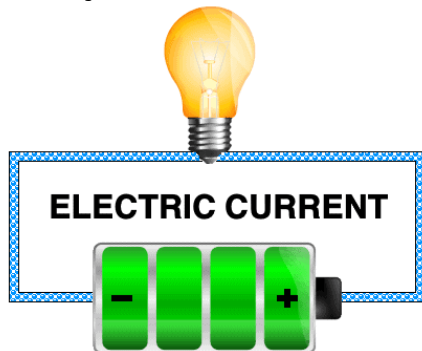
2. Is series circuit preferably used in home wiring?

No

3. What is current electricity?

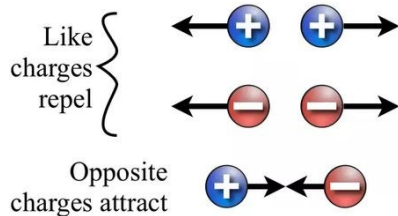
Current electricity is the flow of electric charge through a wire.

It's what happens when you connect the positive and negative ends of a battery with a wire, allowing the charge to move and power things.



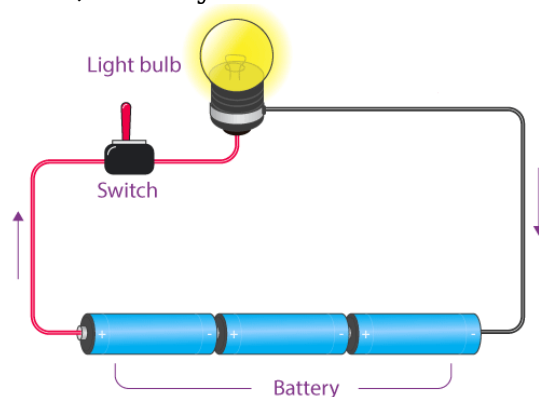
4. What types of charges repel each other?

Like charge repel each other



5. Name a few components of an electric circuit.

Bulb, battery or cell and switch



9.3 Write answers in detail,

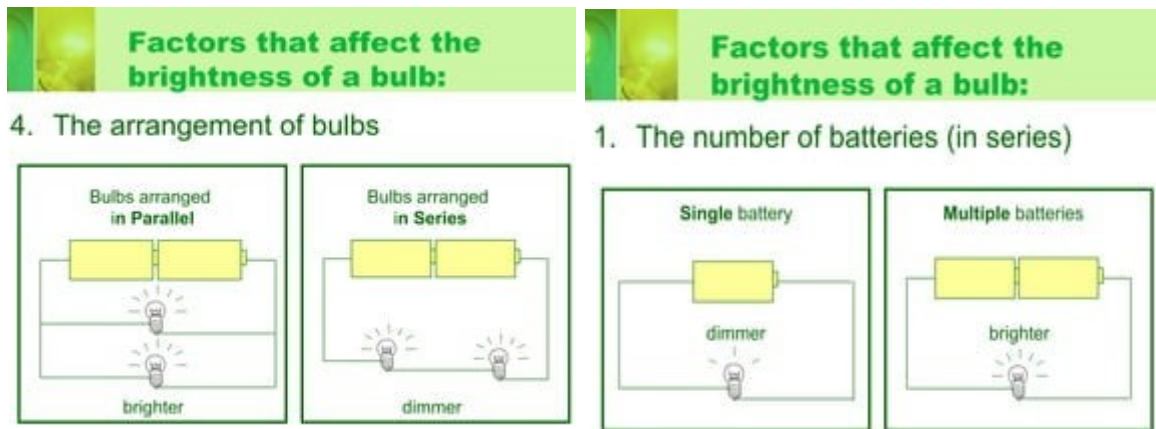
1. Describe the factors that affect the brightness of the bulbs in series circuits

□ **More batteries = Brighter light:** Adding more batteries in a series circuit increases the power, making the bulbs shine brighter.

□ **More bulbs = Dimmer light:** Adding more bulbs in a series circuit (without adding batteries) shares the power, making each bulb shine dimmer.

□ **Shorter wires = Brighter light:** Shorter wires let electricity flow more easily, making the bulbs brighter. Longer wires make the bulbs dimmer.

□ **Thicker wires = Brighter light:** Thicker wires allow more electricity to flow, making the bulbs brighter. Thinner wires restrict the flow, making bulbs dimmer.

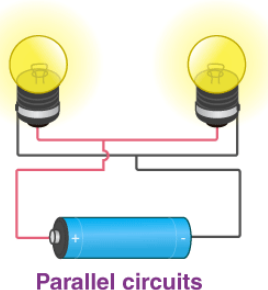
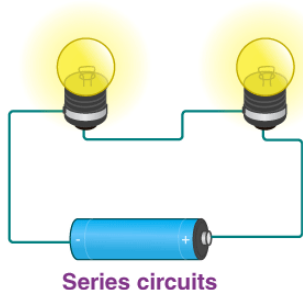


2. Describe the characteristics of parallel circuit,

In a parallel circuit, electricity flows through different paths. Each path gets only part of the total electricity. If one path breaks, the others still work.

TYPES OF CIRCUIT

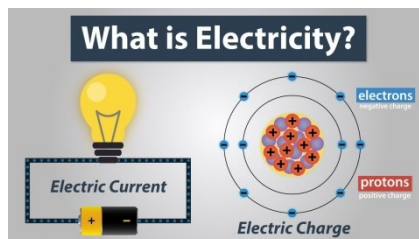
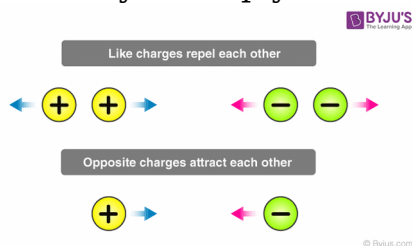
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The Learning App



3. What is charge? How does it produce electricity?

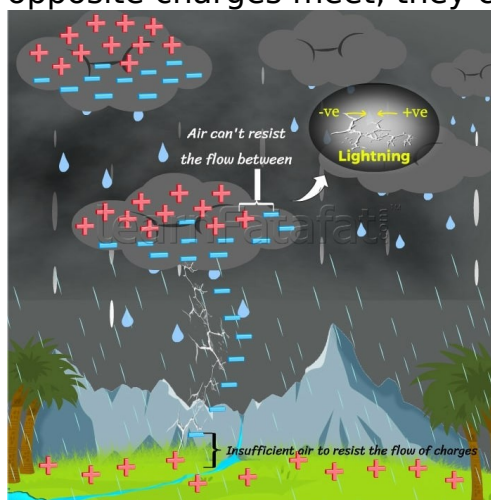
Charges come in two types: positive and negative.

Electricity is simply the flow of these charges



4. Explain the phenomenon of lightning

Lightning is static electricity. Rubbing clouds build up charge, and when opposite charges meet, they create a giant spark: lightning.



9.4 Constructed Response Questions

1. The electricity due to charges at rest is called static electricity.

(a) Is it being mostly used in domestic wirings?

No, because current that is flowing in a conductor is not static.

(b) How can it be produced?

Static electricity occurs when two or more bodies come in contact and separate again. This is the phenomenon between surfaces that results in the transfer of electrons from one atom to another.

(c) How can we make it useful in daily life?

□ **Cleaning the air:** Factories use static electricity to trap dust and prevent it from polluting the air.

□ **Making copies:** Photocopiers and laser printers use static electricity to make the ink stick to the paper.

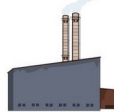
□ **Smelly things:** Some air fresheners use static electricity to spread their scent.

Uses of static electricity

1. Photocopiers and printers



2. Filtering factory smoke
(smoke precipitator)



3. Spray painting cars



2. Electric circuit is the path along which electric current flows.

(a) Sketch an open and closed circuit and differentiate between the two.

When the switch is ON, the circuit is closed, and electricity flows. When the switch is OFF, the circuit is open, and electricity stops flowing

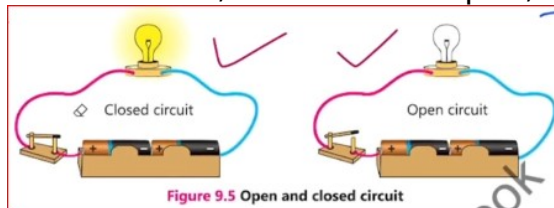


Figure 9.5 Open and closed circuit

(b) What are series and parallel circuits?

In a series circuit, everything is connected along one path, like a string of lights. The same current flows through everything, and you can't control each device separately.

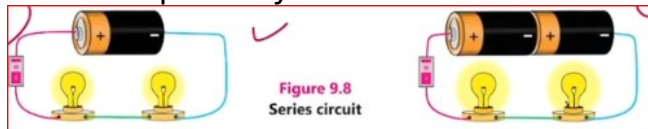


Figure 9.8
Series circuit

In a **parallel circuit**, two or more electric devices are connected independently across a source (cell or battery) giving multiple paths to the current to flow



Figure 9.10 Parallel circuit

(c) Describe the advantages of a parallel circuit.

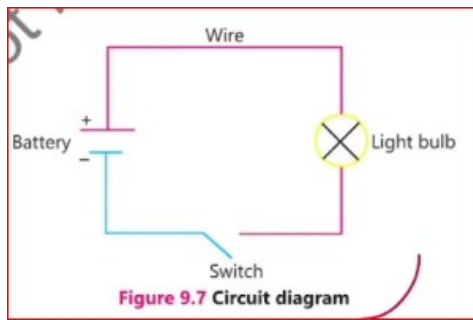
The big advantage of a parallel circuit is that if one part breaks, the other parts still work

3. What type of circuit contains two or more branches for the current to flow?

In a parallel circuit there are two or more branched exist for the flow of current.

Explain.

4. Draw and interpret simple circuit diagrams using symbols.

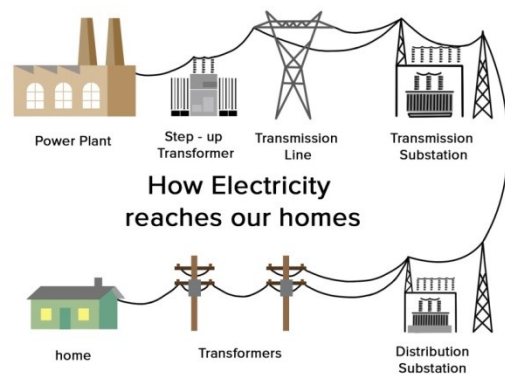


The diagram shown below describes an electric circuit. It is thus, called circuit diagram

9.5 Investigate how electricity is produced and supplied to your town and home?

Electricity is made in power plants using things like wind, coal, gas, or water.

¹ It travels long distances on high-voltage lines, then goes through substations to lower the voltage. Finally, it reaches our homes through smaller lines and transformers, power lights and appliances.



Unit-10 Magnetism

QUESTIONS

10.1 Encircle the correct option.

1. A magnet can attract objects made of:

- a. copper
- b. iron**
- c. aluminum
- d. silver

2. The end of a magnet are called its:

- a. sides
- b. heads
- c. terminals
- d. poles**

3. A freely suspended bar magnet always stays along:

- a. east-west direction
- b. north-south direction**
- c. any direction
- d. keeps oscillating

4. Magnet is not used in:

- a. a dynamo
- b. an electric bell
- c. a speaker

d. a heater

5. Which one is the true statement?

a. North pole attracts north pole

b. North pole repels north pole

c. South pole repels north pole

d. South pole attracts south pole

6. To increase the strength of an electromagnet, we can:

a. change the direction of the current.

b. insert a wooden core inside a coil.

c. increase the amount of current flowing

d. decrease the amount of current flowing.

7. The space around a magnet where it can attract magnetic materials:

a. electric field

b. magnetic field

c. magnetic pole

d. magnetic core

8. Which will not cause a magnet lose its magnetism?

a. heating it

b. dropping it repeatedly

c. coating it with oil

d. hitting it

9. Which will not increase the strength of an electromagnet

a. adding an iron core

b. adding a plastic core

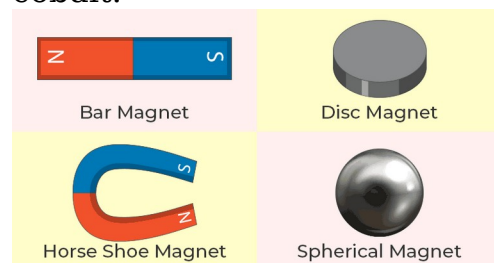
c. coiling the wire

d. increasing the current

10.2 Write short answers.

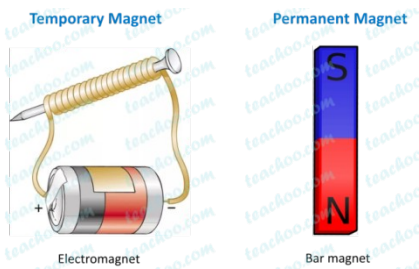
1. What is a magnet?

A material or subject that can attract the objects made of iron, nickel and cobalt.



2. What is the difference between a permanent magnet and temporary magnet?

Permanent magnets keep their magnetism. Temporary magnets only have magnetism when near a strong magnet or in a magnetic field, and they lose it easily.



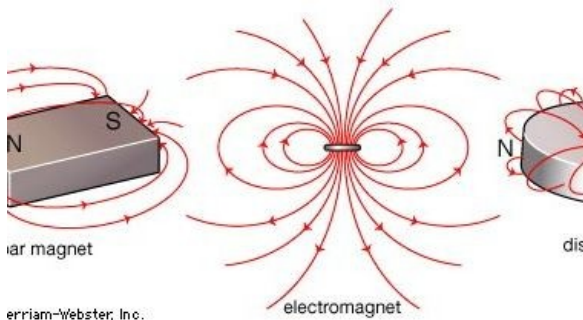
3. Write strokes method of making a magnet.

Activity 10.4

- Take a bar magnet and an iron nail.
- Rub or stroke the bar magnet on the iron nail many times in the same direction.
- The iron nail will become temporary magnet.
- Check it by bringing near paper clips or common pins.

4. Define magnetic field.

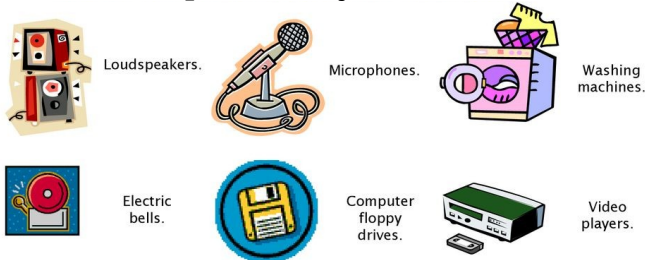
A magnet exerts a force on an object (magnetic material) which is brought close to it. The region around a magnet where it can attract magnetic materials is called magnetic field



erriam-Webster, Inc.

5. Write names of five things which are made of magnetic material.

Electric bell, speaker, dynamo, debit card and SIM

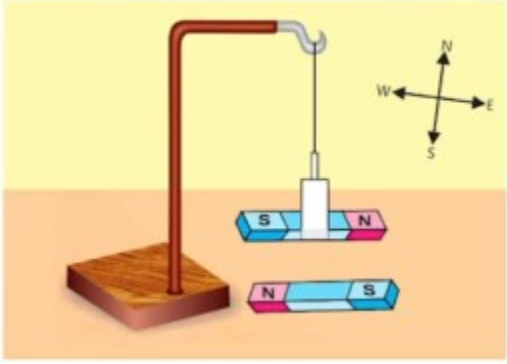


Give answers in detail.

1. Show with the help of an activity that a freely suspended bar magnet always points north to south direction.

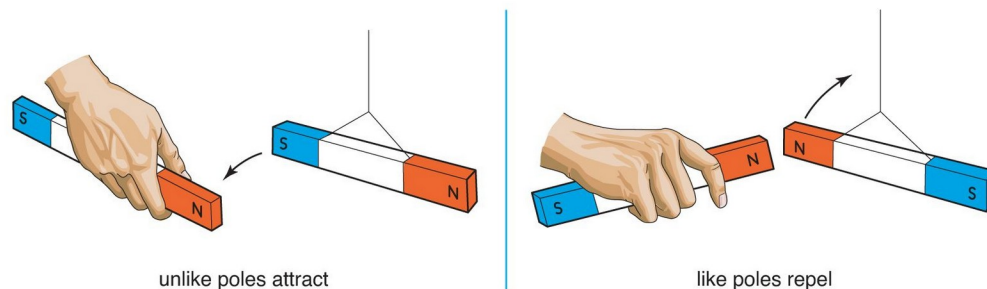
Activity 10.1 Properties of a magnet

- Place a bar magnet along east-west direction on a table.
- Suspend another bar magnet from a stand using a thread over it so that it can rotate freely as shown in the Figure.
- Observe and note the direction of suspended magnet when it comes to rest.
- Now remove the magnet placed on the table.
- Observe and note the direction along which the suspended magnet come to rest.
- Why does it happen?



2. How can you prove that like poles repel each other while unlike poles attract each other?

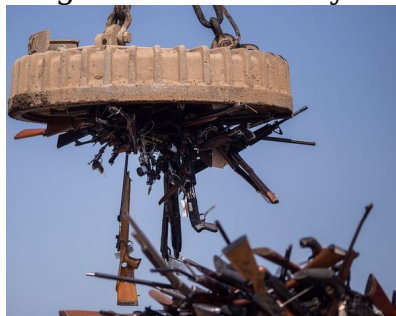
Hang a magnet (A) so it can spin freely. If you bring the north end of another magnet (B) near the north end of magnet A, they will push each other away (repel). But if you bring the south end of magnet B near the north end of magnet A, they will pull towards each other (attract). This shows that like poles repel and opposite poles attract.



3. Describe a few uses of magnets.

Dynamos use magnets to make electricity.

Magnets can separate iron from other materials. Cranes use powerful magnets to lift heavy iron objects.



4. A, B and C are three similar bars. One is a magnet, another iron bar and the third an aluminum bar. How would you identify which one is which?

If you hang three bars (A, B, and C) and one (A) lines up north-south, it's a magnet. If B is attracted to A, B is likely iron. If C doesn't react to A, it's likely something like aluminum.

5. How can you draw the magnetic field of a bar magnet using iron filings. Write down the procedure.

Activity 10.3

- Take a bar magnet and lay a piece of card over it.
- Sprinkle the iron filings over the card and tap it gently.
- What do you observe?
- Lines made by iron filings around the magnet show the magnetic field.
- Draw the magnetic field lines by using magnetic compass as shown in the Figure.

6. Describe applications of electromagnets in daily life.

- ☐ Electric bells use electromagnets to ring.
- ☐ Speakers use electromagnets to make sound.
- ☐ Dynamos use electromagnets to generate electricity.
- ☐ Cranes use electromagnets to lift heavy iron.

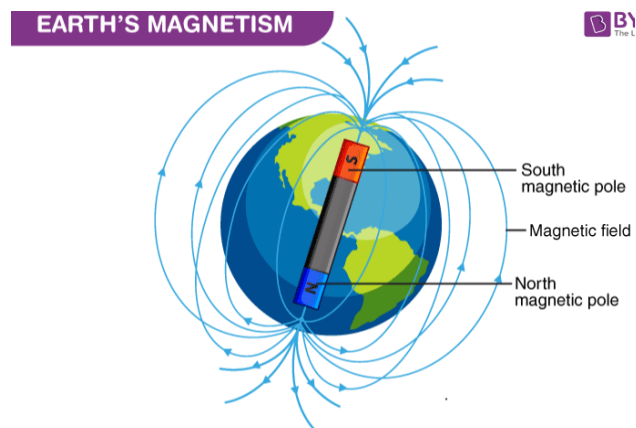
10.4 Constructed Response Questions

1. You have a bar magnet without any indication of poles. How will you identify its north and south poles?

Suspend a bar magnet with silk thread with support. A freely suspended bar magnet always points in the north south direction. The pole which is towards north direction is a north pole and other pole is south pole.

2. What causes the Earth's magnetic field?

The Earth's magnetic field is mainly caused by the spinning liquid iron in its core. This spinning creates electric currents, which then generate the magnetic field that extends into the atmosphere.



3. How does metal core affect the strength of electromagnet?

An electromagnet's strength changes depending on what's inside the coil. Iron makes it stronger, while other metals like steel make it weaker.

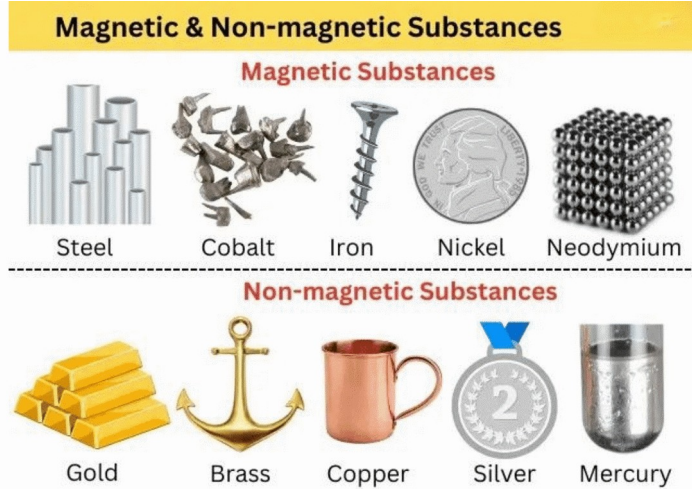
4. How are electricity and magnetism related?

Electricity and magnetism are connected. Moving electrons create magnetism, and moving magnets create electricity. This connection is called electromagnetism.

10.5 Investigate:

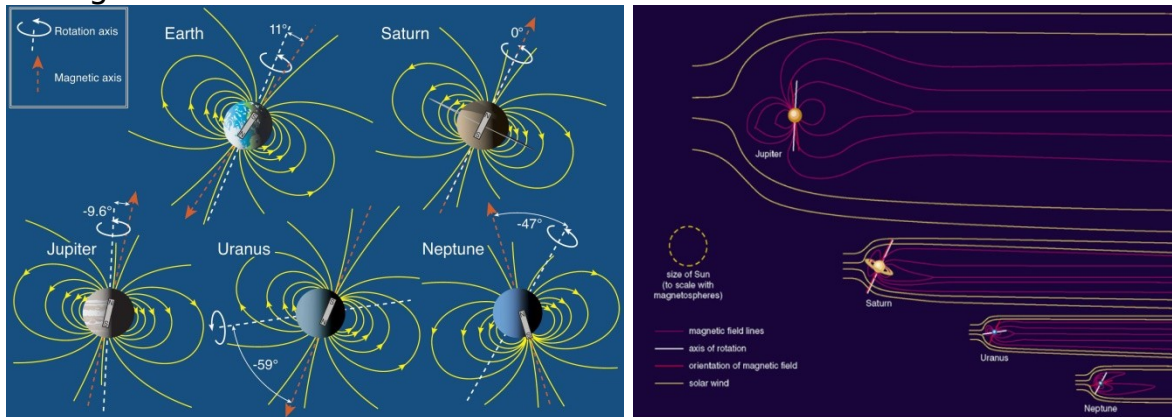
1. The metals which can be magnetized.

The most common magnetic materials are the metals iron, cobalt and nickel or combination of these with other materials.



2. Do the other planets have magnetic field like the Earth?

Mars and Venus have weak magnetic fields, but Jupiter, Saturn, Uranus, and Neptune have much stronger ones than Earth, with Jupiter having the strongest of all.



Unit11-Technology in Everyday Life

QUESTIONS

11.1 Encircle the correct option.

1. Summer season vegetables are generally grown in:

a. November-December

b. February-March

c. April-May

d. July-august

2. Winter season vegetables are generally grown in:

a. January-February

b. June-July

c. July-August

d. September-October

3. Which of the following is a summer season vegetable?

a. radish

b. carrot

c. garlic

d. brinjal

4. Which of the following is a winter season vegetable?

a. turnip

b. cucumber

c. okra

d. tomato

5. Fertilizers provide the plants:

a. water

b. air

c. light

d. nutrients

6. Which of the following is not used in the preparation of yogurt?

a. raw milk

b. pre-made yogurt

c. thermometer

d. red chilly

7. Which of the following is not used in making cheese at home?

a. milk

b. sugar

c. salt

d. lemon juice

11.2 Give short answer.

1. Write names of some summer plants.

Bitter melon, brinjal, cucumber, okra, tomato, pepper, etc.



2 State names of some winter plants.

Carrot, radish, spinach, cabbage, turnip, garlic etc.








3. Write names of elements present in chemical fertilizers.

Sodium, potassium, phosphorus etc

THE ELEMENTS OF FERTILIZERS

What elements do plants need so they can grow and bloom? How do fertilizers deliver them? This graphic inspects your garden's fertilizer.

C	H	O		N	P	K
N	P	K				
Ca	Mg	S				
B	Cl	Cu	Fe			
Mn	Mo	Ni	Zn			

4. Give names of tools required for preparation of soil bed for vegetables.

Earthen pot, soil, leaf manure, farmyard manure, water, seeds of some seasonal plant.



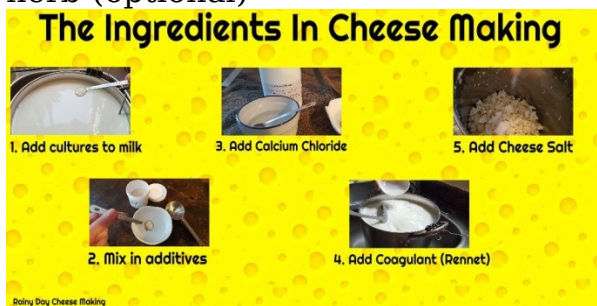
5. Name the ingredients required for preparation of yogurt.

Milk, thermometer, one litre of raw milk and 2 table spoons of pre-made yogurt.



6. State the ingredients required for preparation of cheese.

Raw milk (1 L). Lemon juice (1 table spoon), white vinegar (distilled), salt or herb (optional)



11.3 Write notes on the following.

1. Fertilizers:

Fertilizers are added to crops to boost growth. They contain key nutrients like nitrogen, potassium, and phosphorus. Farmers use them to increase yields. There are two main types: organic and inorganic fertilizers.

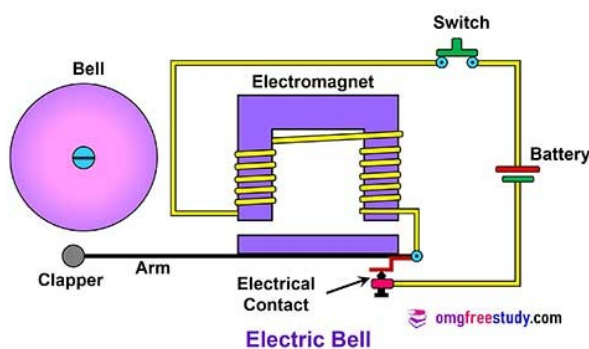


11.4 Investigate

2. Electric bell:

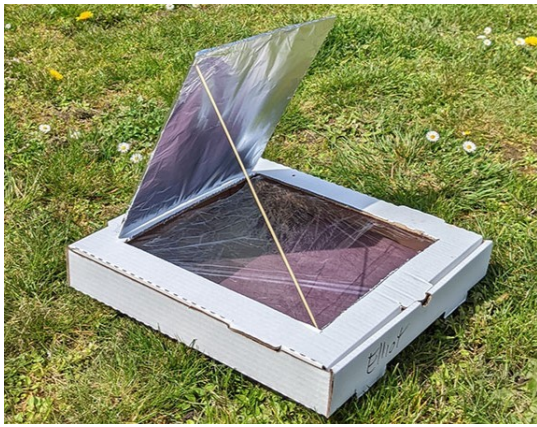
An electric bell uses an electromagnet.

When electricity flows, the electromagnet attracts a hammer that hits the bell. This breaks the circuit, stopping the electricity. Then, the hammer springs back, the circuit connects again, and the process repeats, making the bell ring.



3. Solar oven:

Solar cookers use sunlight to cook food. They work by converting light energy into heat, warming a pot. Concave mirrors help by focusing the sunlight onto one spot.



1. Importance and uses of technology in everyday life.

Technology has greatly improved our lives, making them easier and more convenient in countless ways. It has also revolutionized how we understand the world and even space.



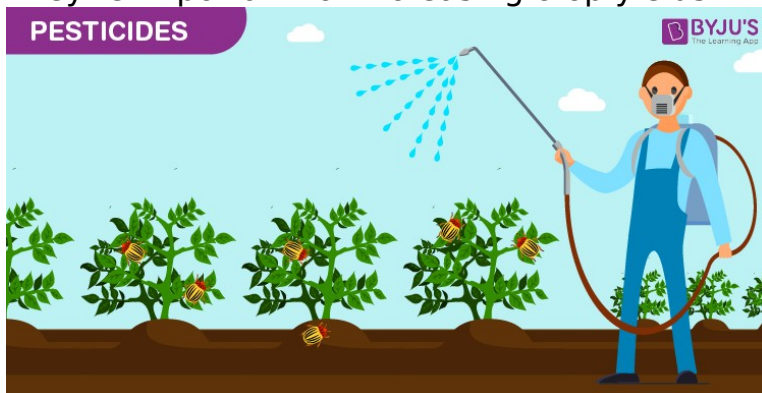
2. The ways technology can be helpful and harmful.

Helpful: use in education. Use in health sector. Use in safety.

Harmful: lack of sleep. Wastage of time. Loss of privacy.

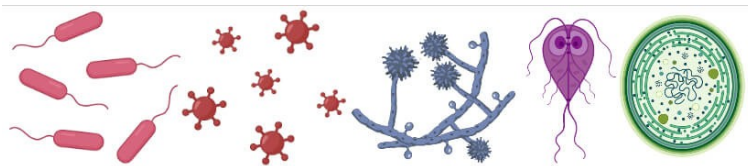
3. What are pesticides? How are they important?

Pesticides are chemicals used to kill insects and other pests that harm crops. They're important for increasing crop yields.

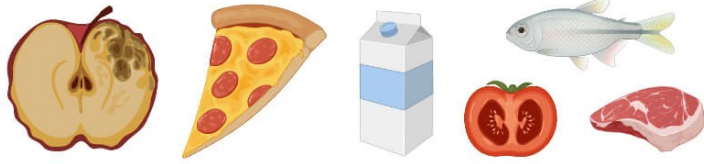


4. Use of microorganisms in food industry.

Bacteria and yeast we used in making food items. Yeasts to make bread and shone while bacteria's are used in making yogurt.



Types of microorganisms in foods



Unit-12 Solar System

QUESTIONS

12.1 Encircle the correct option...

1. Which is the largest planet?

- a. Earth
- b. Mars
- c. Jupiter**
- d. Venus

2. Which is the nearest planet to the Sun?

- a. Saturn
- b. Mercury**
- c. Venus
- d. Earth

3. How long does it take for a geostationary satellite to complete one orbit?

- a. one day**
- b. one week
- c. one month
- d. one year

4. Which of the following emits its own light?

- a. Moon
- b. Venus
- c. Sun**
- d. Jupiter

5. Before which planet, does the Venus orbit?
- a. Mercury
 - b. Mars
 - c. Earth**
 - d. Saturn
6. The system that locates the position of an object on the Earth surface is:
- a. GRS
 - b. GMS
 - c. GPS**
 - d. PGS
7. The 1st artificial satellite was sent into space in:
- a. 1945
 - b. 1955
 - c. 1957**
 - d. 1962
8. Tail of comet points:
- a. towards the Sun
 - b. away from the Sun**
 - c. towards the Earth
 - d. away from the Earth

12.2 Differentiate between:

1. Stars and planets.

Stars: A huge object which emits its own heat and light is called a star

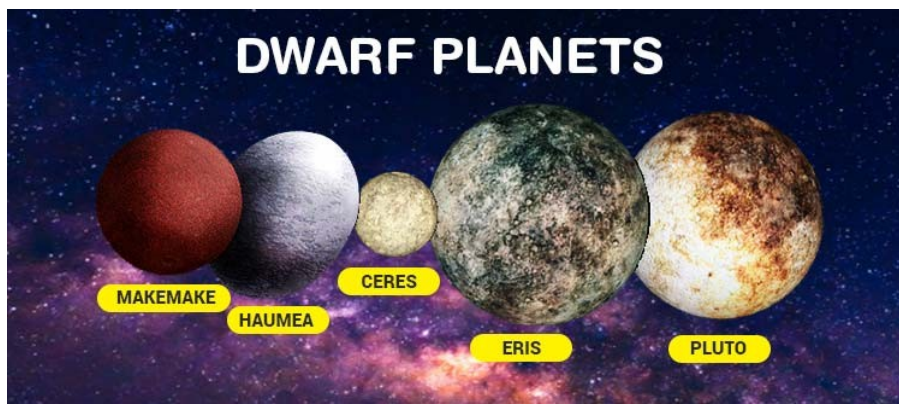
Planets: Planets are not stars because they do not shine with their own light



2. Planets and dwarf planets

Planets: Some objects which revolve around the Sun are called planets

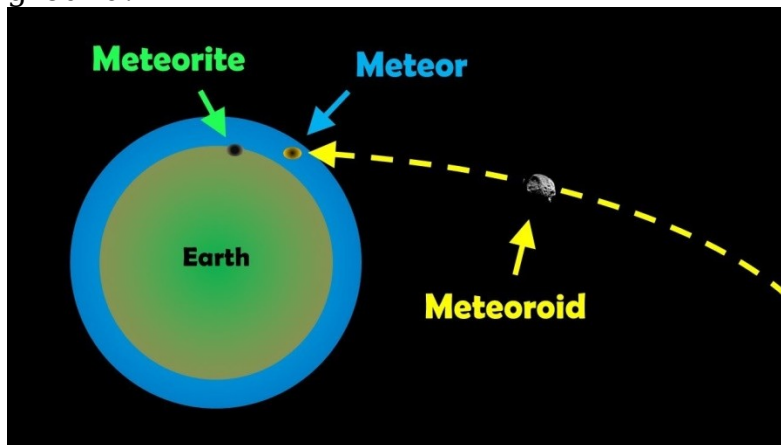
Dwarf planets: The objects moving around the sun and look like the planets, but their sizes did not qualify for being planet.



3. Meteor and Meteorite

Meteor: it is a meteoroid enters the earth's atmosphere and burns

Meteorite: a large meteoroid enters the earth's atmosphere and hits the earth's surface without completely burning up, it makes a crater on the ground.



4. Natural satellites and artificial satellites

Natural satellites: The planets, their moons and many other heavenly bodies which are found naturally in the space

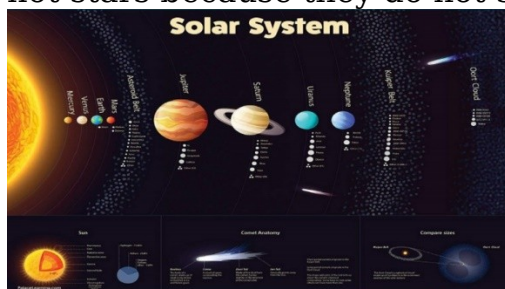
Artificial satellites: Artificial satellites are man-made objects launched into space to orbit Earth. They play a huge role in improving our lives by helping with things like communication, navigation, and weather forecasting.



12.3 Briefly describe:

1. Characteristics of planets.

Some objects which revolve around the sun are called planets. Planets are not stars because they do not shine with their own light.



2. Characteristics of asteroids.

Asteroids are chunks of rock and/or metal that orbit the Sun. They come in various shapes and sizes. Many asteroids are found in the asteroid belt, a region between Mars and Jupiter. They are also called minor planets.



3. Characteristics of comets

Comets travel slowly around the Sun, taking a long time for one orbit. They speed up when they get close to the Sun, which is also when we can see them



4. Characteristics of meteorites

A meteoroid that survives its trip through Earth's atmosphere and hits the ground is called a meteorite, and it can create a crater..



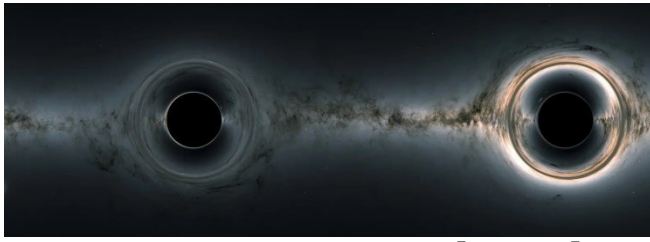
12.4 Constructed Response Questions

1. Scientists (Astronomers) make predictions about space and try to prove them. State few predictions of the scientists about space.

Astronomers predicted the existence of black holes based on the laws of physics and general relativity.

This theory predicts that universe began as a hot dense state and has been expanding ever since.

Astronomers predicted that there were other planets orbiting stars beside our own sun.



2. Man is trying to travel to other planets. Which is the most likely planet, man intends to travel?

Mars is currently most likely planet that humans intend to travel because of its closeness to the earth. 24 hour day, seasons and a rocky surface etc to the earth.



12.5 Investigate:

1. How artificial satellites have improved our knowledge about space and research

Artificial satellites have greatly improved our knowledge of space. They help us study the universe, explore our solar system, and improve communication and navigation.

2. How satellites know where we are?

GPS uses 30 satellites to help us find our location. Our phones listen for signals from these satellites, and by calculating the distance from at least four of them, GPS can pinpoint our exact location.